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## THE SCIENTIFIC REVOLUTION AND ITS IMPACT ON MODERN ECONOMICS\*

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### INTRODUCTION

The main thesis of this paper is that a new revolution has occurred in the economy of the civilized world, a revolution to be called the scientific revolution. This revolution occurred mainly in America around the end of the last century. It superannuated, therefore, the old industrial revolution which had its origin in England during the latter part of the previous century and then spread to America in the decade or two following the War of 1812. The impact of the new revolution on modern economics has caused changes no less significant than those produced by the former revolution, some of which will be pointed out in the latter part of this paper after the nature and characteristics of the new era have been indicated.

There is no longer anything revolutionary about industrialization in America. Industrialization in this country has been continuous, coming mainly as a sequel to the political revolution and as a part of the process of a new country becoming weaned from the economy of the old world, the process of a land caught in a primitive stage of development coming rapidly abreast of the most advanced civilization of the period. By the time of the Civil War, America had begun to develop a civilization that gave it substantial independence from the rest of the world. By 1900, the western frontier was closed and the census revealed that the majority of the population no longer made its living by agriculture. During most of the present century, the growth of employment in manufacturing, as a percentage of total employment, has not kept pace with the growth in commerce and trade, and both have lagged behind employment in government and professional services—the loser throughout the period being agriculture. Not only commercialization and socialization, but other movements such as urbanization, mechanization, consolidation, and greater capitalization are the aspects of the evolution of a growing economy and concomitants of industrialization, in some cases its causes and in others its consequences.

Of paramount significance during these developments was the practical application of science. Science and its handmaiden, technology, constituted the dynamic and the upsetting force behind the new revolution, the force that made the period one of revolution instead of evolution. Science was applied not only in the field of the natural sciences and in industry, but also in agriculture, en-

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gineering, medicine, marketing, management and other fields, and in all with revolutionary results. The significance of science did not lie, therefore, in its subject matter alone, but also in its purpose and its methodology. Science is creative in purpose and fact-finding in methodology; it analyses, classifies and summarizes facts in order to draw conclusions; and it attempts to test its conclusions with previously established facts and with new facts as they may be discovered. For these reasons the term "scientific" seems to be a better choice of a name for the new revolution than "technological," "new industrial" or other terms that have been suggested.

The period which first felt the impact of science was, roughly, one beginning a little before 1880 and extending to the outbreak of World War I in Europe, a period including the roaring eighties, the gay nineties and the beginning of the present century. It should be pointed out, however, that no period in history is self contained, nor are the contributions and characteristics of a previous period erased by a succeeding revolution. Those that have survival power merely lose their dynamic influence and become commonplace though still important from the point of view of quantity of usage. For the same reason the main developments of the scientific revolution did not come to an abrupt halt at the end of the period; they merely lost their revolutionary character. Since the creative force of science, a force that is not exhausted by its use, constituted the dynamic element in the new era, there is ample justification for inferring that the scientific revolution marked the beginning of what has been called our "permanent revolution." It was in this period that the pattern for the present economy was forged and many of our most successful modern institutions were established.

To prove that this period should be singled out as a period of revolution, rather than a mere span of time in economic evolution, we need but to refer to history for analogies and precedents, and to see how historians have defined and distinguished previous stages of development and other so-called revolutions. Although any segmentation of history into eras or stages is arbitrary, historians do seem to have agreed that there were periods that may be marked as revolutions, each having its peculiar characteristics and its dates of beginning and end. Although a review of previous revolutions is essential as a background for an understanding of the new era and as a guide in selecting the forces and factors which constitutes its main characteristics, it need not be attempted here. The division of economic evolution into stages such as the hunting and fishing, the pastoral, the agricultural, the handicraft, and so on, are already well known. Also familiar to all students of economics are the so-called revolutions, such as the renaissance, the commercial revolution, the mechanical revolution and others descriptive of some aspect of economic evolution. Adding a new revolution to this list is a presumptuous as well as a precarious undertaking; but doing now what future historians will some day do for us should not only keep history up to date but help better to understand our own age and our modern economy.

Before proceeding with a description of the new era it should be pointed out that a single example or a first event of an important development occurring

in an unfavorable environment or ahead of its time may be of little or no significance. For example, Hero made a steam engine about 300 B.C. in Constantinople, and da Vinci designed an aeroplane nearly 500 years ago. Moreover, the Greeks seemed to have thought out much of what had to be rediscovered centuries later and, as is said, they usually had a name for it, but they never perfected a system for linking together the various components necessary for the implementation of their ideas. They failed to develop an economy that could provide them with a surplus of capital and the means of protection against outside marauders. They spurned industry and commerce in favor of the finer arts, a practice, incidentally, which some of our scholars would have us imitate today.

The industrial revolution was the result of a concatenation of events occurring during a short period of time. It is perhaps best remembered by the year 1776, a date that marks the beginning of American democracy and the publication of *The Wealth of Nations*. Moreover, it came only eight years after the invention of the steam engine by James Watt, a friend of Adam Smith, and only one year after the several textile inventions were brought together in one machine, a feat accomplished by Richard Arkwright, sometimes called the Henry Ford of his day. Before the end of the century, Edmund Cartwright had patented his power loom, and Henry Maudsley had made a lathe which formed the basis for the machine tool industry. So numerous were the inventions of this kind that the period is often referred to as the mechanical revolution. The period is also known for other significant contributions to our present economy, for example, the factory system, wage labor, city slums, the limited liability corporation, and the beginning of experimental science. These developments, and many others that might be mentioned, are characteristics of the industrial revolution, characteristics that should not be confused with those of the later scientific revolution.

In order to summarize the characteristics that distinguish the scientific revolution, the achievements of the period may be grouped according to what appears to be the most significant areas of development. Accordingly, the revolution may be described by examining briefly the following factors: (1) technological developments, especially those in materials and in the sources and forms of energy, (2) systems of operation, including the systems of manufacturing, marketing management, (3) institutional changes important in creating and perpetuating the revolution, and (4) economic theory and the new schools of economic thought.

#### TECHNOLOGICAL DEVELOPMENTS

*A. Materials.* The materials with which a civilization fashions the tools used in its productive processes have been usually included among the factors by which a stage or a revolution is known and distinguished. The scientific revolution has been characterized accordingly as the age of steel. Steel had been in use for several centuries, but it had never been produced cheap enough for everyday purposes until the Bessemer and the open-hearth furnaces were perfected about

the time of our Civil War. Likewise, wood, one of man's oldest materials, had defied all attempts at substitution until plastics were developed by Hyatt a little later. The first alloy steels, which permitted the cutting of ordinary steel as such steel cuts iron and as iron cuts wood, were not perfected until near the end of the century. Copper, another old and useful metal, was not produced on a large scale until after 1880; electrolytic aluminum and carborundum were produced in 1891; and cement was made by the efficient rotary kiln around 1895—to mention only a few of the most basic materials.

Other materials that have proved to be of revolutionary importance to the present economy were also first produced during this period: the numerous products of coal tar distillation became available after 1882, sulphate paper in 1884, and nitric acid by the cyanimid process in 1895. By the end of the century the age of industrial chemistry had begun. America became independent of Britain in the production of inorganic chemicals after 1890, although its independence of Germany in organic chemicals did not come until after World War I. The revolution in chemicals, it may be noted, still shows little indication of reaching a stage of diminishing growth; research budgets in chemistry are the largest in American industry and still growing. The situation is much the same in other branches of science. For example, it is estimated that one half of the products sold in a drug store did not exist ten years ago, and that ninety per cent of prescriptions are now written for medications that did not exist fifteen years ago. These materials and many others upon which the present civilization is dependent were largely unknown to the industrial revolution. Synthetic chemistry no longer attempts to duplicate nature, but to make materials that nature cannot duplicate.

*B. Energy.* Energy, or power as it is more popularly called, has always been regarded as a vital factor in man's progress. In fact, one of the best indexes of the standard of living of any country is the amount of energy per capita it uses. Each new source and each new form releases human energy for other pursuits and opens up new fields of application that often herald a new age. The internal combustion engine perfected by Otto in 1876 was a development of this kind. It was followed by the invention of the automobile by Benz in 1885, a newer type of engine by Diesel in 1895, and the aeroplane by the Wright Brothers in 1903, all of which taken together have indeed revolutionized transportation. In the field of stationary power, the development of the water and the steam turbines during the last decade of the nineteenth century was of no less significance in permitting greater efficiency to be gained from old sources. Now that a new source, atomic energy, and a new type of engine, the jet engine, are on the way, a still newer revolution is predicted.

A new form of energy is of as much practical importance as a new source, for it makes possible what was previously impossible. The phenomenon of electricity, for example, was known to the Greeks who gave it its name; and Sir William Gilbert, physician to Queen Elizabeth I, because of his early experiments, has been called the father of electricity. Many others since his day made valuable contributions to the subject, but even so, the industrial revolution had



only mechanical and thermal energy to do its work. It was apparently not until Edison invented his incandescent lamp in 1880 and installed his "jumbo" generator in 1882 that this form of energy became of practical importance in the economy of the country. The invention of wireless by Marconi in 1898 and other inventions by DeForest and Fessenden during the next fifteen years started another series of developments that produced the new field of electronics, the field that gives us hope of getting some day our mechanical brain. Other forms of energy, magnetic, chemical, and radiant, were put to greater use mainly during this period.

#### SYSTEMS OF OPERATION

*A. Mass Production.* No factor or characteristic of our economy has received more comment and sometimes admiration than our system of manufacture, generally known as mass production. Although this system contains the specialization of labor of the guild system, the functional separation of marketing and manufacturing of the domestic system, and the powered machines of the factory system, it contains other features found in none of these. Eli Whitney is usually regarded as the father of mass production because of his early application of the principle of interchangeable parts. Eli, however, did not have the other essentials of the system known as mass production today. He could not standardize parts with sufficient accuracy for mechanical feeding and fitting; he had not yet made automatic special purpose machines; he did not know how to use powered conveyors and moving assembly lines; and he did not have the benefit of time and motion study to help him simplify tasks and schedule production. These several elements of the system were developed and perfected separately, for the most part, during the latter half of the nineteenth century. They do not seem to have been integrated into one complete system for large scale production, however, until soon after Walter Flanders, an expert on work simplification, became production engineer for the Ford Motor Company in 1908. Thereafter the new system soon proved its superiority and spread rapidly throughout American industry.

Mass production, it might be mentioned, usually implies large-scale production, although size is only a relative characteristic. The mass-production plant does have to be large enough to make its product, to use specialized machines and equipment of the most efficient size, and to obtain the optimum degree of specialization of labor and management. Such a plant, furthermore, due to usual high overhead costs, requires continuous operation and sufficient volume of purchases, services, and sales to permit bulk handling and trading. It is usually built for a definite capacity and it operates efficiently and economically only within narrow output limits. A plant larger than necessary, due to the cost and inconvenience of transportation of materials and communication of workers, is at a relative disadvantage. The trend in recent years has been toward decentralization and diversification, which usually mean smaller-scale production, but production nevertheless.

*B. Mass Marketing.* Mass production leads naturally to another development

of the scientific revolution that is sometimes overlooked—mass marketing. The industrial revolution never advanced in the distribution of its products much beyond the methods developed by the preceding commercial revolution. Peddlers and hucksters were still common in this country at the end of the last century. Probably one of the first new developments in merchandising in this country was the old trading post, an institution regarded by many as the prototype of the modern department store. Several early merchants have been designated as the father of the department store idea, but it was not until considerably after the Civil War that John Wanamaker developed the idea into its modern form. The first unit of the Great Atlantic and Pacific Tea Company was established as early as 1859, though the chain store idea did not spread until several decades later. These contributions and many others suggested by such names as F. W. Woolworth, A. T. Stewart, Sears and Roebuck, R. H. Macy, Marshall Field, Montgomery Ward, John H. Patterson, P. T. Barnum, William Wrigley, and others who were leaders in various aspects of mass merchandising during the decades that followed. In 1870 there were only 7,000 druggists on the road; in 1900 there were 93,000. The national magazine and mass advertising began in the eighties and grew phenomenally until the end of the period of the revolution.

Marketing, having once become large scale, created the opportunity and the incentive for the study of ways and methods of further improving the process. Many of the policies and methods in use today were tested and proved successful during the period, such as the one-price policy, the use of prizes, the acceptance of returned merchandise, free delivery, cash and carry, the money-back guarantee, installment selling, the rudiments of market analysis, and many others. An early example of the modern discount store, for instance, was the cut-rate drug store which appeared in the eighties. Developments such as these when combined into an integrated system have been characterized as scientific merchandising and constituted what has been called the mercantile revolution. Mass production is dependent, of course, on mass distribution to create a "mass" demand and maintain a continuous market for its standardized output. It forces upon marketing and merchandising the burden of servicing and adjusting to individual consumer's needs. If distribution costs too much, as many say it does, it is largely because it enables production to cost relatively so little. Neither good bargains nor better mouse traps in today's economy sell themselves.

*C. Scientific Management.* In addition to the revolutions occurring in other factors of the economy, a revolution occurred also in management itself, the factor which organizes, directs, and controls the other factors of production. In previous eras management was seldom separate from entrepreneurship and ownership and therefore was usually sheltered from objective or critical investigation. By now, however, enterprises had become too large, too complex, and too diverse in ownership for personal direction and control, and there was no body of recorded experience to call upon for help. The guild system had left many fine examples of workmanship and methods of operation which had been passed along from one generation of workers to the next as the great tradition. The type of management that followed has been characterized, accordingly, as tradi-

tional management—a name, incidentally, that is descriptive of some types of management found today. The industrial revolution initiated many changes in management methods: double entry bookkeeping was adapted to factory accounting; some aspects of the line-staff organization, so successfully used by the Prussian army, were beginning to be employed; the personnel activities of Robert Owen gained considerable popularity during the first half of the nineteenth century; and, finally, much study and emphasis was devoted to procedures and systems, an emphasis that has led to the management that resulted being characterized as systematic management.

A new type of management had its beginning in 1895 when F. W. Taylor read his first paper before a group of professional engineers. His first book, *Shop Management*, published in 1903, described a type of management to be later named scientific management. This book propounded, among other things, the principle of high wages and low labor costs, a statement that seemed, at the time, nothing more than a witty paradox. Taylor, in testifying before a congressional committee, stated that the acceptance of this principle by both capital and labor would require nothing less than a mental revolution and that this mental revolution was, after all, the main objective of his work. In less than a decade Henry Ford was applying the principle and at the same time accumulating one of the largest fortunes in history. Scientific management was an attempt for the first time to apply scientific knowledge and the scientific methodology to the study of human effort and business activity. It soon incorporated the contribution of any field of scientific investigation that seemed to offer a solution to some of its problems. Among these were cost accounting, which was developed as a complete system in America by Henry Metcalf in 1885; psychological testing, fatigue study, and the principles of learning, after the field of psychology shifted its base from the philosophical to the scientific; and the application of mathematical statistics to business problems, after the work of Karl Pearson—both about the same time.

Even with such a solid basis for continued progress, however, scientific management met resistance from several sources. The labor unions claimed that it robbed the worker of his skill, making it the knowledge of management, and that it tended to dilute labor and cause technological unemployment. As a result, Congress in 1912 prohibited the use of the stop watch in making time studies in all government operations, a prohibition which was not removed until after World War II. Furthermore, scientific management fell into disrepute with businessmen because of its frequent misapplication by some of its early practitioners, the efficiency experts. The sudden increase in demand for management personnel engendered by the production phase of World War I made it necessary to recruit and promote many who were poorly prepared for their responsibilities. These new managers had learned a few of the techniques of scientific management without a knowledge of the painstaking research of Gilbreth, Gantt and other associates of Taylor, and they tried to imitate Harrington Emerson, the great exponent of the efficiency movement, without Emerson's experience. As a consequence, the Society of Industrial Engineers, an organization of the better trained of the experts, gave up its identity not to be re-estab-

lished until after World War II. During the intervening years, managers became more critical of their techniques and more cautious in installing them in the face of strong union opposition, but piecemeal and under one name or another the principles of scientific management have prevailed to constitute one of the most significant contributions of the scientific revolution.

*D. The Integration of Science and Industry.* The best test of the contribution of management in general to the success of the revolution is found, not only in the improvement of its own methods, but since it is the factor that controls other factors, in the total system it creates for adopting and using the results of scientific research in industry. Science itself was largely an importation from Europe; what American management contributed was an effective method for its application in a free enterprise economy. This method may be described in six steps.

The first step is market analysis, or, the use of various statistical tools to find out what people want, how much they will buy, and how much they are willing to pay for it. The second step is library and field research to find out from published information and statistical surveys what has been done and what developments may be expected in the near future, especially those of possible competitors. The third step is protection, a step which is carried out by the acquisition of patents, copyrights, options, leases, trademarks, etc., or merely by secrecy. The information and the rights thus protected may then be capitalized, pledged for a loan, and depreciated as other business assets. They constitute a new factor of production in our economy more important in many cases than land or natural resources. The fourth step is applied research carried out in laboratories, shops, offices, stores, or in the field. It differs from pure research in that the applied researcher knows what he is looking for and what to anticipate, knowledge that has made him a productive and profitable worker in a business economy. The fifth step is commonly called the pilot plant stage. Here all laboratory quantities are translated into production quantities, costs are computed, and results are tested in small quantities for both utility and customer acceptance. The final step is, of course, the construction of a complete plant or operation designed specifically for the purpose.

By means of this methodology the creation and development of new products and services became an orderly and profitable business, and research became a major functional department in many companies, frequently with a vice president in charge. More recently companies have been formed for the purpose of conducting research as their sole product, a type of company of which Edison's laboratory was an early example. Now, it is being proposed that the Bureau of the Census recognize research as a separate new industry. In America, therefore, science and industry came together, apparently with profit to all parties; while in Europe, for example, no later than last summer, it was announced as news that science and industry are "beginning to get together."

#### INSTITUTIONAL CHANGES

The foregoing constitute, therefore, what seem to be the basic factors characterizing the scientific revolution in America. However, revolutions and stages

of development are not complete without their institutional factors. These factors, though often more permissive than causative, are no less a part of the change and usually necessary for the ultimate success and permanence of the revolution. Among such factors, the changes in education and in economic administration seem to be of such importance as to have themselves created nothing less than an institutional revolution.

*A. Education.* In the past, education has usually been associated in our thinking with literature, culture, the arts, and the proper enjoyment of life; less often has it been considered as one of the generative factors in material progress and the production of wealth. In the fields of the sciences and business administration changes took place that were not only revolutionary within themselves but contributed substantially to creating the environment for the occurrence and rapid spread of the scientific revolution throughout all phases of the economy.

Science has been a subject of study and speculation for many centuries, as may be indicated by mentioning such names as Aristotle, Bacon, Galileo, Descartes, Newton, Dalton and others. It does not seem to have been a subject for professional study, however, until the eighteenth century when it came into the program for the degree of doctor of philosophy in Germany. The professional doctor's degree, it may be noted, dates back nearly nine hundred years to the University of Bologna which awarded the degree of doctor of medicine. Thereafter degrees were given in law, divinity, literature and other fields. The peculiar feature of the Ph.D. was the requirement that the doctor's thesis make an original contribution to knowledge, thus something more than the usual examination and exhortation on what was already known. This requirement led students to search all fields of knowledge for thesis material, especially those fields not already pre-empted by other degrees. By the middle of the nineteenth century the new degree had proved its worth. Thereafter the annual tide of American students going abroad for advanced study turned to the German universities now famous for their great scholars and their popular seminars for group study.

In 1874, the degree was established at The Johns Hopkins University, and before the end of the century Andrew Carnegie is supposed to have hired the first Ph.D. in industry, a metallurgist. Thereafter, American universities turned rapidly to the new type of degree, and their graduates in the sciences began the gold rush to industry. In the applied sciences, particularly in agriculture, engineering and medicine, the revolution was even more pronounced. Among significant developments were: Federal aid to colleges of agriculture and the mechanical arts after 1862 and to agricultural experiment stations in 1887, the founding of the several engineering societies and their corresponding degrees mainly during the latter half of the century, and the contributions of John D. Rockefeller to medical education around the beginning of the next. Furthermore, during this period the education of the masses through at least the high school grades became the great American goal. After these developments the educational institutions of the country could both create new knowledge and train scientists and technicians in its use. They could thus perpetuate the process of both creation and application.

College education in business, however, has been from the beginning an



American development. Even now, in Europe and among those who follow Plato and the classic tradition, it is considered somewhat less respectable than other fields of study. The first proposal to establish a school or department to teach business in college was made, apparently, by Robert E. Lee while he was president of what is now Washington and Lee University. Lee died, however, before his proposal could be put into effect. In 1881, a businessman by the name of Wharton gave the University of Pennsylvania funds for such a purpose, and accordingly, a school of commerce, accounts and finance was soon established. The idea does not seem to have been contagious for more than a decade, but by the turn of the century the movement began which has given schools of business the largest enrollment of any of the professional schools, with the possible exception of education.

The curricula of these schools drew heavily upon economics and accounting, but other fields, particularly law, statistics, psychology and English, were searched for useful materials to study and teach. Accounting rose rapidly to the status of a learned profession after the passage of the law for the certification of public accountants by the State of New York in 1896. The new fields of marketing and management were explored but were developed rather late to have played a part in producing the revolution; marketing was studied extensively only in a few schools in large urban centers, and management was left mainly to the schools of engineering. As a result, these two subjects even today are still in the process of catching up, especially in the South.

The main contributions of the schools of business to the progress of the revolution were, first, the analytical study and the publication of business policies, practices and so-called trade secrets, and second, the training of a professional personnel capable of managing the large and complex business organizations needed for the new economy. Their contribution has had its greatest effect, however, since the period under study. Now that graduate study, and since World War II the research program for the Ph.D. in business administration, have been undertaken by the schools of business, there is little reason for fearing that any new scientific development could fail to be made useful because of a failure in administration or that any undertaking could become so large that it could not be efficiently organized and managed.

*B. Economic Administration.* Most of the institutional changes occurring during the period of the scientific revolution are well known and have been evaluated by economists. A few may be called to mind, however, because of their total effect in creating what has been spoken of both as an institutional revolution and as the beginning of a new economic system. One of these of great political, as well as economic, importance was the rise of bureaucracy as a form of government supplementing democracy. Bureaucracy, in spite of its bad name, has proved to be an effective agency for the administration of economic affairs. Good examples are the various Federal boards or commissions, the most noted being, perhaps, the Interstate Commerce Commission created in 1887, or the Department of Commerce and Labor—a department composed of bureaus—created in 1903. Note should also be taken of the growth and importance of corporations, trusteeships, holding companies, and other forms of business combination; also

of organizations for collective action both political and economic, for example, farmer's and consumer's cooperatives and labor unions established for the purpose of collective bargaining—especially after the founding of the American Federation of Labor in 1884; and finally, of trade, professional and institutional associations formed for the purpose of regulating and standardizing the activities of their members.

From these examples, and many others that might be given, it is apparent that American society was getting organized. It was creating institutions both for the collective control of the economic factors essential to its progress and for the collective regulation of its various specialized functions. Although these two purposes were often mixed, even in the same group, they should not be confused. Collective control was an attempt to gain monopolistic advantage by eliminating competition; collective regulation was an attempt to eliminate chaos by establishing institutions through which competition could be practiced and thus preserved.

The first of these, collective control, appeared the more obvious and was the first to receive political attention. The Sherman Anti-Trust Act of 1890 recognized what was taking place and marked an attempt to prevent the monopolization of the American economy. This act and others for the same purpose were generally regarded by the public as punitive measures to curb big business and to discipline businessmen—the so called robber barons, and by the latter as an infringement of their natural rights. By the economists, however, they were more correctly appraised as measures to counteract control, whether individual or collective, to keep competition free, and to make laissez-faire work. It was now evident that the propensity to monopolize, to conspire, to restrain, and to control were no less inherent in a democratic society or economy than the propensity to consume, to succeed, to possess, or to give—propensities that are the proper concern of a society and its government. The efforts to maintain a competitive system by thus outlawing monopoly were often misdirected, poorly executed, or almost abandoned as in the twenties when mergers and rugged individualism were in fashion and again in the thirties when the substitution of combination and control was sought as a way out of the depression. On the whole, however, they were constructive and probably sufficient for the purpose; the rule of reason proved to be, in spite of its faults, a good rule. These efforts did serve, it now appears, to curb monopoly and to protect both the producer and the consumer against the worst abuses of competition without destroying the initiative and the productivity of the system.

Collective regulation, the second purpose of this institutional revolution, though less obvious, was perhaps the more important of the two. What most of the new organizations of both businessmen and others were trying to do was to bring some kind of order into their respective businesses, trades, or callings by establishing rules of the game and a means for their enforcement. They were trying, in other words, to regularize and to regulate themselves for their own good and protection. Evidence of these objectives may be seen in their codes of ethics; their institutional advertising and other devices for promoting their common welfare; their various agencies for the standardization of sizes, nomen-

clature, and trade practices; their associations and institutes for exchanging information and for approving, certifying, and accrediting what was to them acceptable; and finally their willingness to accept the decisions of referees, umpires, and czars. Society was becoming more close-knit and its citizens were thus exercising their right of free assembly for the correction of some of their mutual grievances. The need for positive regulation was eventually recognized by Congress in the passage of the public utility acts, the Clayton Act, the Federal Trade Commission Act and others designed for their implementation and improvement. Congress in these acts, apparently realizing that to preserve competition it must preserve competitors, began to do what business was trying to do for itself. It recognized the inability of the competitive system to operate orderly and effectively and of its participants to compete profitably yet honorably without approved practices and a code of law enforced by an agency competent for the purpose.

*C. The Economic System.* What these two institutional changes meant, judged from the prospective of the present, was the beginning of a new economic system. This system may be described as regulated competition to distinguish it from the old laissez-faire system and its free competition. Regulated competition, though probably borrowing from previous systems, was unlike the just-price system of the canonists, the gild system, or mercantilism, nor was it akin to any of the forms of socialism popular in economic theory. It evolved mainly after the closing of the western frontier, the raising of the tariffs, the increase in industrialization, the spread of knowledge and education, and the growing power of the Federal Government.

In the new economy improved transportation and communication brought people of the same interests together; news traveled with the speed of light; statistics, directories and manuals were published; and competitors were rated and evaluated as to their current strength and their potential capacity to compete. In such an economy, or more realistically, a game, a contender no longer plays the whole field blindly, or plays without himself being watched and studied. Even though competitors are numerous, they can often be classified and reduced statistically to calculated risks and mathematical probabilities. Under such conditions the laws of perfect competition no longer apply; the group of competitors is now a society—actually an oligopoly—which soon develops its leaders, its outcasts, and its regular members, and before long, its Dorothy Dix, its Hoyle, its Robert's Rules of Order, and finally a new *lex mercatoria* which in a democracy eventually becomes the law of the land. The development of this new system came in answer to the changes and the needs of the period, and constitutes one of the major factors characterizing the scientific revolution. The success of the system, in spite of its many deficiencies, has no doubt been America's chief buttress against socialism, communism and economic dictatorship.

#### ECONOMIC THEORY

Finally, as previously indicated, a new economic revolution is not complete without a new school of economic thought that attempts to interpret and ra-

tionalize its causes, its purposes, and its main developments. Whether the scientific revolution produced such a school may be questioned. The school of thought dominant throughout most of the period was, of course, the neo-classical school headed at this time by Alfred Marshall. The theory of this school was to some extent new, but hardly new enough. Marshall was an Englishman and wrote good English economics; neither he nor his followers seem to have recognized that what was taking place in America was anything more than a continuation of the old industrial revolution. The refinements of the marginalists helped clarify old theory but brought it no nearer to reality. Even Marshall was later disappointed that economists generally preferred to quote his principles rather than emulate the example of his *Industry and Trade*.

The really new economics of the period was, of course, institutional economics, a school originating largely in the works of Thorstein Veblen. He and his followers were generally keen analysts of the economy, outspoken critics of the classical school, and great debunkers of business and businessmen. They seem to have derived so much satisfaction from criticism and debunking, however, that they never got around to developing a constructive or consistent body of thought. Their students became labor economists, utility economists, agricultural economists and so on, or they strayed from the field to become lawyers, political scientists and sociologists. In so doing, nevertheless, they did make a real contribution, not to economic theory as such, but to the new economic system by helping to free it of some of the ideological restraints of the old school and to guide its various activities during the period of the institutional revolution then in progress.

John R. Commons, the most noted and, no doubt, the most constructive of the group, likewise, did not try to develop a theory for the school that would serve as a focal point for its ideas or a rationalization of its activities, except, of course, the main theory that economic society is the product of its institutions. However, the idea of regulated competition seems to be implicit in his writings and his work, even though not always advocated with sufficient clarity and emphasis to distinguish it from certain forms of socialism, laborism, the welfare state, or a controlled economy later adopted as new-dealism. The idea of regulated competition is better deduced by summarizing what the institutionalists were doing and writing, each in his own field, and determining the pattern of their work and their objectives. That pattern seems to have been, in effect, regulated competition.

The economists of both schools were fully aware of the changes taking place in the economy and took an active part in protesting many of the dis-economics and abuses of the day, especially those of the twenties. They rallied in full force to protest the Smoot-Hawley Tariff (the so-called scientific tariff), a tariff that came just over a hundred years after the Tariff of Abominations, but they were thoroughly rebuffed. They made their services available and were taken in almost wholesale by the New Deal, and in the eyes of the public almost as thoroughly discredited. Commons, in his *Institutional Economics*, published in 1934, helped to reconcile institutional and neo-classical doctrine, but it was hardly adequate as a complete economic theory, and it came too late. The in-

stitutionalists had already gone off in all directions and the neo-classicists had found another Englishman with a new English economics.

The new economics of John Maynard Keynes did much to arrest the development of the economics of a regulated economy by substituting in its stead the economics of a controlled economy. Although Keynes contributed a most useful semantics and a much needed methodology, his economics was developed for a matured economy and a theory which seemed to point toward perpetual inflation or socialism. His economics was kinetic but it was not dynamic. Taking physical productivity for granted or as relatively fixed, he and his school concerned themselves mainly with a better distribution of values. They often failed to distinguish between a distributive share of wealth, such as wages, and the productivity or contribution of a factor of production, such as labor. For example, they did not seem to recognize that a high wage does not mean that labor produced it, but only that it got it. Regulated competition was from the beginning much concerned with a better distribution of wealth but not at the expense of a smaller or even a constant production of wealth. The American economists of both schools had witnessed the enormous productivity of modern manufacturing and marketing, the efficiency of scientific management, the initiative and incentive of the competitive system; and they recognized them as forces that should not be sacrificed in the new system. Being fully aware of both the acquisitiveness of society and the ineffectiveness of politics, they were gradually and cautiously evolving, it now appears, both the regulatory institutions and the economic policy for a new school of economic thought.

Such then completes the outline of the developments which taken together produced what seems to have been a new economic revolution as great and as distinct as any of the revolutions that have existed heretofore. Although the revolution is still too recent for a proper assessment of all its implications and its impact upon modern economics, yet time is fleeting and teachers of economics may be losing ground should they be caught teaching an economics of the past or using ideologies and analytical tools that do not fit. After the great depression many economists lost hope in competition—even regulated competition—as a way of economic life, but the idea was not abandoned. The whole economy got out of balance during the twenties and remained ineffective until called upon to arm for a great war. Regulated competition and its theory learned much from this experience, but there is much yet to be learned and unlearned before it can become a complete system and a theory ready for the history books.

#### MODERN ECONOMICS

The changes produced by the scientific revolution have raised many problems for modern economics. Although time does not permit solutions here, it is possible to suggest at least one area where further study might prove helpful in making the subject of economics more useful to those who are still attempting to apply its established principles. Many such workers often feel the need for an economics that does not ignore so many exceptions to its theory, or clash so often with the findings of its applied branches. The most basic need of such an



economics is for a body of concepts and terms that denote and connote economic phenomena that exist today, rather than similar phenomena that existed in previous eras when such terms were first used in economic literature. Words and concepts having grown old and obsolete should be re-defined or else retired from use. In the space remaining, therefore, three such concepts may be selected for re-examination; namely, competition, cost, and the corporation.

Competition, though practically legislated out of existence in agriculture, labor, and other limited fields of activity, in the field of business and possibly athletics is still our national policy and the ideological goal of most economists. Economists, however, by interpreting competition too narrowly in their zeal to stamp out every vestige of monopoly and thus to make competition too pure and too perfect, have probably done the cause of competition more harm than good. In describing monopolistic competition, for example, they have often given the impression that since monopolistic competition is analogous to monopoly it is a form of monopoly instead of a form of competition, as its name denotes. The downward sloping supply curve, it may be pointed out, is typical of all heavily capitalized companies and industries; the demand curve is largely the product of effective advertising; and price is often administered with long-run objectives or potential competition in view. Such mis-allocation of resources as may be shown by static cost and demand curves may be highly problematical, therefore, and more than counterbalanced by the economies of mass production and mass marketing.

The term "brand competition" is more descriptive of this form of competition, generally, for it is no longer commodities but brands that compete. Even with consumer research, the average consumer cannot calculate the relative values of all the specifications, services, and conveniences of most of the products of industry. He no longer buys under the law of caveat emptor, but under the policy of money-back guarantee. What he buys today includes the reputation of the maker or distributor, and the satisfaction that he is in style and keeping up with the Joneses. Even in the case of an oligopoly, competition is often sufficient for adequate consumer choice. The psychologists have found that the average consumer cannot ordinarily distinguish accurately for the purpose of evaluation between more than about five or six choices, and more often less. It is the same principle that applies in selecting winners among contestants and in rating or grading examination papers. Neither is price leadership nor following similar price policies proof of monopoly and conspiracy more than of rivalry and orderly competition in a society where every one is known and under the scrutiny of every one else. In today's economy, monopolistic competition is, no doubt, less wasteful than perfect competition, the only kind feasible in many cases, and probably the best kind of competition there is.

Cost, another troublesome concept, is often spoken of as a known and accurately determined amount, although any cost except out of pocket expense is largely arbitrary, depending upon the methodology employed in its computation. The high capitalization of modern firms has magnified the importance of all fixed expenses connected therewith, and under the new labor laws and collective

bargaining contracts much of the cost of labor is becoming an overhead cost. As is well known, there are many methods for the valuation of fixed assets and inventories, for the calculation of depreciation and amortization, and for the adjustment of values due to fluctuations in the purchasing power of money. Increasing diversification and integration have magnified also the importance of methods of allocating joint costs and of inter-plant pricing. Moreover, the failure to include a return on equity capital as interest has always distorted cost, as well as both interest and profits as defined by economists. As a consequence of these difficulties, many accountants no longer regard fixed expenses, especially those incurred in connection with sunk capital, as an item of short-run cost of production; for after all, costs do not have to be distributed evenly over short-run periods or total units of output. They may be recovered quickly, gradually, or not at all, depending upon company policy or expediency, or upon the permission of authorities regulating taxes and accelerated depreciation. Unit cost, therefore, is a term that may be used safely only by the cost accountant who understands the calculation; managers usually avoid its use in analyzing operations by drawing their company supply and demand curves as break-even charts or other diagrams expressed in terms of total costs. Some of this confusion was started by Ricardo when he introduced the language of finance and business into the literature of economics. It now awaits another Keynes who can supply a new semantics and a more logical and discriminating terminology.

Another concept that may need overhauling is that of the large, diversely owned corporation and its function in modern society. Today, the corporation is about the only example left of the old concept of an economic man. The consumer, according to the market analysts, is the victim of mass advertising, fads, prizes, and high pressure salesmanship; the laborer, only a little better, is captivated by propaganda and union loyalty; the farmer, like the teacher, is the follower of a way of life; and the businessman is now best known only as a Hollywood caricature. The only example of the real *homo economicus* still in existence is the modern business corporation.

As an institution, the corporation has largely taken over the function of entrepreneurship in the present economy. As such, it is society's main supplier of goods and services, its chief employer of labor, saver and lender of money, owner of capital, collector of taxes, and is rapidly becoming its chief giver of gifts. The corporation is generally a long-run enterprise, preferring status and security in many cases to short-run profits. It has usually a published history, a professional reputation, and a public conscience guided and guarded by a corps of experts in public relations. Its actions are no longer determined entirely by the interplay of economic forces, but are more often the result of careful planning with the aid of such mathematical devices as linear programming, operations research, the theory of games, and military strategy, all subject to review by the overriding judgment of the "Corporate Mind." It is, no doubt, the most efficient form of organization for group action directed toward the accomplishment of a specific economic objective that society has yet evolved.

Even in government operations, some of the most effective units are those organized and administered as corporations.

The corporation is of particular importance to teachers of economics, for one of their main functions in modern society, whether realized or not, is training future corporation executives. The individual in today's economy is too small a unit to compete successfully as an entrepreneur. The corporation, on the other hand, provides an instrumentality through which he may enter business by becoming a member of a group, giving it his loyalty, sharing its success, and thus existing as a part of the corporate personality. By this means the business or technical school graduate can practice his special field of training and devote himself to a professional career which offers not only remuneration, opportunity, and security in fair degree but also a respectable way of life. These graduates thus no longer study and enter business with the expectation of starting a new business enterprise, getting rich, or even becoming a corporate director or president. Since there are eight times as many vice presidents as presidents, however, they may expect to become before retirement at sixty-five at least a vice president. What they need from the economist, therefore, is an economics that can be translated into the language and methodology of accounting, statistics and management, and an economics usable in solving some of the problems of the corporate firm. This training they must eventually get, either from economists or from some other profession even more competent to supply the service.

#### CONCLUSION

In taking modern economics to task for some of the foregoing deficiencies, it must be remembered that the science of economics was not developed as a branch of business administration. Although the word *economics* is derived from a Greek term meaning household management, or home economics in today's terminology, the study of economics developed mainly as a branch of social and political philosophy. It still has its original function to fulfill by serving society in general as one of the social sciences, a function that it cannot afford to abandon. Economics becomes embroiled in the problems of business administration because it purports to analyze, explain and criticize business practices and policies. It cannot escape, therefore, the responsibility for accuracy and reality in its interpretations, no matter who may compose its clientele. At one time schools of business administration relied on economics to provide a common background and a connecting link for the several business disciplines, but in recent years economics has been reduced to merely one of the seven separate and often non-communicating fields. As a result, economists are left with only the functions of teaching sophomores their "Principles" and providing graduate students one of their required hurdles similar to the language requirement—a requirement which, it may be noted, is being gradually discontinued.

As a subject of study among the social sciences, economics often lacks popularity because it is considered too hard, too dull, or too dismal. As a subject in

business administration, however, it yields credit for these "honors" to accounting and business statistics, but only to face other criticisms almost as bad. In this field its teachers are said frequently to waste time in offering assumptions as a substitute for a knowledge of the facts, in defending conclusions that contain an obvious bias, in labelling business management as a mere technique when it is no longer mere, and sometimes, though not often, in basing their concepts and their precepts on the wrong revolution.

# A MONEYFLOWS APPROACH TO CONSUMER BEHAVIOR

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## I. THE MONEYFLOWS STATEMENT

Up to the present time the social accounting framework for the analysis of consumer behavior would seem to have been provided by national income accounting. The variables of consumption and savings are defined on the basis of their meaning in national income accounting. These variables are then related to other national income concepts such as national income, disposable personal income. Variables outside the social accounting framework of national income accounting may then be introduced.

In recent years a new social accounting framework has made its appearance based on moneyflows or flow of funds. The two major studies to date are the Federal Reserve's *Flow of Funds in the United States, 1939-1953* (Washington, D. C.: Board of Governors of the Federal Reserve System, 1955) and Morris A. Copeland's *Moneyflows in the United States* (New York: National Bureau of Economic Research, 1952). The latter is the pioneering study and in addition to developing the accounting framework goes on to some interesting theoretical interpretations. The former is a fuller statistical study which takes careful pains to avoid subjective interpretations.

The virtues of flow of funds analysis stem from the greater amount of information that it provides us. Most importantly, the financial transaction is given the same prominence as the nonfinancial transaction. The sources and uses of funds statement for the consumer sector shows financial sources ("net increase in liabilities") of consumer credit, mortgages, etc. and financial uses ("net increase in financial assets") of currency and deposits, federal obligations, etc. as well as nonfinancial sources (e.g., payroll, interest, dividends, etc.) and nonfinancial uses (durable goods purchases, taxes, etc.).<sup>1</sup> It is to the nonfinancial transaction that national income accounting pays its exclusive attention. The personal savings category of the household account in national income accounting is a residual category and packs in highly significant nonfinancial transactions as well as the net difference between the various financial uses and financial sources of funds.

Some information is lost in the flow of funds formulation of the consumer

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<sup>1</sup> Cf. *Flow of Funds, op. cit.*, Table I, "Consumer Sector: Sources and Uses of Funds Statement," p. 73. A detailed analysis of the relationship between the various transaction categories found in flow of funds analysis and those in national income accounting for the personal sector will be found pp. 41-72.



sector. But to a considerable extent the loss is all to the good. Nonprofit institutions and pension plans are part of the personal sector account in national income accounting but not of the consumer sector. Only the estimated net cash withdrawals of unincorporated businesses are considered a source of funds in the consumer sector. The recording of the entire net income of unincorporated enterprises as personal income in national income accounting results in the personal savings category including the net saving of unincorporated enterprise. The flow of funds analysis avoids this mixing of different types of saving.

Additional information is lost by the omission of transactions in kind and imputed income. As the terminology "flow of funds" suggests, the analysis concentrates on two-ended transactions settled in money or credit. The omitted information can, however, be found in other sources and in memoranda provided in the flow of funds analysis itself.<sup>2</sup>

## II. ON UNDERSTANDING CONSUMER BEHAVIOR

1. *A Financial Uses Function.* Various questions can be answered by reference to flow of funds analysis. We are able to tell how the proportions of financial to nonfinancial uses and sources have varied over time. We can measure the relative significance of the consumer in the different transactions accounts. At the same time we can tell with varying degrees of accuracy with what other sectors these transactions have been carried on.

One of the most valuable uses of flow of funds analysis is the testing of hypotheses about consumer behavior. The significance of financial sources as a variable in consumer behavior has not been adequately tested. Do financial sources exert their effect on nonfinancial uses or on financial uses? Although consumer credit may ostensibly finance the purchase of consumers' durables and mortgage credit might be thought to do the same thing for housing expenditures, the substantive effect may be different. The use of credit may really condition financial uses. If credit were not available, holdings of liquid assets might be reduced or smaller additions made to financial savings.

This hypothesis, that consumer credit actually conditions the growth of financial assets rather than nonfinancial uses will be found stated by various writers. For example, E. S. Shaw states:

Aggregative annual data for the United States in 1948-52 hint that the demand for durables is dependent not on credit availability but on such variables as income, family status, and price expectations. If credit is available, it is used to finance consumer purchases. If it is not available, consumers buy durables anyway by drawing on financial assets or by diverting income that would otherwise have gone to financial accumulation.

Aggregatively it appears that consumer credit controls, in our most recent experiment with them, limited the stock of financial assets, not the stock of durable goods.<sup>3</sup>

<sup>2</sup> See, for example, *Flow of Funds, op. cit.*, p. 73, line ii.

<sup>3</sup> "Monetary Policy and the Structure of Debt," *American Economic Review*, May, 1954, XLIV, p. 476. Cf. also M. R. Neifeld, "What We Don't Know About Consumer Credit," speech delivered at the National Consumer Credit Conference for 1951, Lehigh University, p. 10; Reavis Cox, *The Economics of Instalment Credit* (New York: Ronald Press, 1948), p. 437.

TABLE I  
Data for Analysis of Financial and Nonfinancial Uses of Funds  
(Data in billions of dollars)

	(1) Net increase in Financial Assets	(2) Gross Financial Uses	(3) Nonfinancial Uses	(4) Net Increase in Liabilities	(5) Net Decrease in Assets [(Disav- ings) X <sub>2</sub> ']	(6) Gross Borrowings	(7) = (5) + (6)	(8) Gross Financial Sources	(9) Nonfinancial Sources	(10) Average Liquid Asset Holdings
	$Y_1$	$Y_2$	$Y_3$	$X_2$	$X_2'$	$X_2'$	$X_2$	$X_1$	$X_1$	$X_1$
1939	2.5	11.0	73.1	1.2	.8	7.6	8.4	72.6	51.7	
1940	2.4	12.2	79.1	1.8	.7	9.5	10.2	79.4	54.8	
1941	5.8	17.6	91.3	1.7	.8	11.0	11.8	95.1	59.6	
1942	14.7	29.1	99.9	-3.2	.7	8.6	9.3	107.0	70.4	
1943	22.7	32.6	121.3	-.8	.6	6.2	6.8	144.2	89.6	
1944	27.8	36.4	132.5	1.2	.9	6.4	7.3	160.1	115.7	
1945	24.7	34.5	148.0	2.0	1.4	7.3	8.7	167.2	142.9	
1946	9.0	21.5	179.4	4.8	1.1	13.2	14.3	182.7	160.5	
1947	6.8	20.4	203.7	7.5	.3	17.7	18.0	199.8	168.1	
1948	4.9	22.1	219.3	6.8	.5	20.2	20.7	216.9	172.0	
1949	4.4	23.3	219.7	6.9	1.1	21.4	22.5	218.1	174.5	
1950	4.9	26.6	241.6	11.2	0.0	29.5	29.5	238.6	176.9	
1951	8.5	36.1	265.6	6.6	1.4	29.2	30.6	265.0	181.4	
1952	14.8	43.6	286.2	10.5	.2	35.1	35.3	289.1	189.5	
1953	12.9	43.8	301.8	10.7	0.0	37.5	37.5	303.4	199.5	

## Sources:

Cols. (1), (3), (4), (8) are derived directly from *Flow of Funds, op. cit.*, Table I, p. 73.

Col. (2) adds together financial assets showing positive increases, liabilities showing decreases, that part of insurance premiums (listed under nonfinancial uses) equal to additions to insurance reserves (*Flow of Funds, op. cit.*, p. 205) plus consumer credit repayments (*Federal Reserve Bulletin*, Jan. 1954, p. 18, June 1955, p. 634 and Dec. 1955, p. 1368).

Col. (5) represents financial assets showing decreases (which in *Flow of Funds* are netted against positive changes to give net increase in financial assets).

Col. (6) represents liabilities showing increases (which in *Flow of Funds* are netted against decreases to give net increase in liabilities) plus consumer debt repayments.

Col. (9) is based on consumer holdings of miscellaneous assets, currency and deposits and federal obligations as found in *Flow of Funds, op. cit.*, pp. 316, 343, 370. Holdings as of the end of the previous year and the given year are averaged to give each year's figure.

In the field of mortgage finance it has been maintained that liberal down payment requirements under government mortgage insurance programs "tended to give the majority of home buyers the option of holding substantial amount of liquid assets while going into debt for the purpose of buying a home."<sup>4</sup>

The issue is of some consequence for monetary policy. If financial sources of funds condition financial uses, restrictions of consumer credit might not have the desired effect of curtailing nonfinancial uses. At the same time, the "burden" of increases in consumer debt will not be indicated by increases in consumer

<sup>4</sup> Daniel B. Rathbun, "Liquid Assets: A Neglected Factor in the Formulation of Housing Finance Policies," *Journal of Finance*, December 1952, VII, p. 556.

credit. Debt increases (or dissavings) will be offset by increases in financial assets for the individual spending unit.

A "financial uses function" involving the main variables suggested by flow of funds analysis data may help to provide an answer to these questions. Three multiple correlation analyses have been run. In one correlation, net increase in financial assets have been correlated with nonfinancial sources, net increase in liabilities and average liquid asset holdings.<sup>6</sup> The latter variable, although not found in the sources and uses statement for the consumer sector, reflects yearly variations in financial assets and liabilities. The effectiveness of this variable in statistical consumption and savings functions suggested that it be included here.

The multiple regression equation for "net increase in financial assets" shows  $Y_1 = -2.826 + .1251X_2 - 2.614X_3 + .0226X_4$  where  $Y_1$  stands for net in-

crease in financial assets.

$X_1$  = nonfinancial sources

$X_2$  = net increase in financial liabilities

$X_4$  = average liquid asset holdings

The figures in parentheses indicate the standard errors of the regression coefficients. Only the regression coefficient for "net increase in liabilities" is significantly different from zero at either the 1% or 5% level. The negative value of this coefficient indicates a negative relationship between net increases in financial assets and net increases in liabilities. The second order partial coefficient for these two variables is a significant  $-.72$ . According to the Shaw hypothesis, we should have expected instead a strong positive relationship.

A second correlation analysis proves even more successful in showing a negative relationship between financial sources and uses. It also gives a better statistical fit. Liability items showing decreases are subtracted from those liability items showing increases in securing the previous independent variable "net increase in financial liabilities." It could be maintained that such decreases in liabilities are more properly viewed as uses of funds since like increases in financial assets they result in money outflows. Similarly, decreases in financial assets (dissavings) which are now netted against increases can be considered as financial sources since they result in money inflows in the same way as increases in liabilities.<sup>6</sup> In this second correlation all uses are added together and similarly for sources.

Our gross financial uses and sources categories are further extended by un-netting transaction categories themselves. The amount shown in any financial transaction account for the consumer sector in flow of funds analysis is the "netted" amount. For example, the transaction "net increase in consumer credit"

<sup>6</sup> Cf. TABLE I for the underlying data and its sources.

<sup>6</sup> An earlier version of the consumer sector in flow-of-funds analysis does use the terminology of financial sources and uses in the way suggested. Debt retirement is included in financial uses and dissavings in financial sources. (See Daniel H. Brill, "Measurement of Savings," *Federal Reserve Bulletin*, November 1949, p. 1310).

nets out consumer credit extended and repaid. If we showed these amounts separately, detailing consumer credit repaid on the financial uses side and consumer credit extended on the financial sources side, the totals for these categories would be greatly increased. Adequate data were not available for showing other items such as mortgage credit on a gross basis so only consumer credit was shown in this way.<sup>7</sup>

The regression equation here secured was

$$Y_2 = 3.638 + .541X_1 - 1.228X_3 - .397X_4 \text{ where}$$

$$(\text{.066}) \quad (\text{.223}) \quad (\text{.065})$$

$Y_2$  = gross financial uses

$X_3$  = gross financial sources

The three regression coefficients proved significant at the 1% level. The second order partial coefficient for  $Y_2X_3$  confirms previous results being  $-.86$ . The second order partial coefficient for gross financial uses and nonfinancial sources ( $Y_2X_1$ ) of  $.93$  indicates the strong positive effects of the latter on financial uses. The three independent variables explain about nine-tenths of the variance in financial uses with the coefficient of multiple determination corrected for degrees of freedom being  $.88$ . The corrected coefficient in the previous analysis amounted to  $.41$ . The better "fit" secured in this relation verifies the expected resemblance in behavior of dissavings and increases in liability items on the one hand, and increases in financial assets and decreases in liability items on the other. Evidently dissavings and gross extensions of consumer credit exerts their effect on nonfinancial uses and nonfinancial sources provide the basis for debt retirements.

The results of the two previous analyses are further strengthened by a third correlation which has nonfinancial uses as the dependent variable. In this correlation gross financial sources were broken down into two independent variables—gross borrowings ( $X_3'$ ) and dissavings ( $X_3''$ ). The regression equation was

$$Y_3 = -.395 + .479X_1 + 2.135X_3' + 1.318X_3'' + .392X_4$$

$$(\text{.0724}) \quad (\text{.258}) \quad (\text{2.77}) \quad (\text{.0731})$$

All the regression coefficients except for  $X_3''$  are significant at the 1% level. The positive effects of financial sources on nonfinancial uses are shown by the third order partial correlation coefficient of  $.93$  for nonfinancial uses and gross borrowings. It is not surprising to find the corrected coefficient of multiple determination being extremely close to unity ( $.9975$ ). Since nonfinancial uses are such a high proportion of total uses of funds, in effect, we are correlating total sources and uses with obvious results.<sup>8</sup>

2. *Comparison with Statistical Savings Functions.* The development of functions having financial sources as one of the independent variables has definite

<sup>7</sup> In addition to increases in financial assets, part of insurance premiums (shown as a nonfinancial use in flow of funds) equal to additions to policy reserves have been included in gross financial uses.

<sup>8</sup> This is similar to the better fit secured with consumption functions as compared with savings functions. (Cf. Robert Ferber, *A Study of Aggregate Consumption Functions* [New York: National Bureau of Economic Research, 1953], Table 1, pp. 8-9; Table 4, pp. 39-9).

advantages as compared with the conventional savings functions. As we have seen, they permit testing hypotheses about the impact of consumer borrowings and dissavings. They also provide a goodness of fit which in one important respect is superior to that provided by savings functions. What would seem characteristic of most statistical savings functions is the exclusion of the war years in fitting regression equations. Where equations have been fitted to the war years the coefficient of determination is lower than when these years are excluded.<sup>9</sup> The high coefficients of determination that we have secured embrace the war years and are probably made possible by the financial sources variable. World War II resulted in a reduction in dissavings and borrowings. As a consequence of the positive relationship between financial sources and nonfinancial uses, decreases in financial sources tended to decrease nonfinancial uses. Consumer borrowing and dissavings thus worked in the same direction as nonfinancial sources and tended to increase the relative importance of financial uses. A financial uses function can thus explain the increases in financial uses during World War II much better than a savings function can explain the rise of personal savings during this same period.<sup>10</sup>

The adequacy of an estimating equation is ultimately determined by its predictive accuracy. The latter may not be measured by the goodness of fit of the regression function. Ferber's results indicate the extreme margin of error in predicting savings or consumption on the basis of prewar functions some of which show a very high correlation value.<sup>11</sup> The essential weakness of these functions is their inability to predict for prosperous years or for depression years when the weighting of the functions themselves is of an opposite kind.<sup>12</sup> It may be that the regressions developed on the basis of flow of funds data by including financial sources provide a better "all economic weather" relationship than those that have hitherto been developed on the basis of national income data.

### III. THE IMPACT OF THE CONSUMER

The flow of funds framework would seem better capable of explaining why the consumer allocates his funds the way he does than the traditional framework. It also appears more suitable for a study of the spendings impact of the consumer. The disaggregated data enables us to construct our own categories of consumers' uses according to their estimated impact. The personal savings category of national income accounting makes this impossible because it embraces uses with quite different impact as well as eliminating the detail on fi-

<sup>9</sup> Cf. Robert Ferber, *op. cit.*, esp. Table 4, pp. 38-39; R. W. Goldsmith, *A Study of Savings in the United States*, Vol. III (New York: Princeton University Press, 1956), Part IV, "Experiments with the Saving Function," pp. 385 ff.

<sup>10</sup> The Ferber study suggests the advisability of introducing consumer borrowing into the savings function (Ferber, *op. cit.*, pp. 62-3). But if consumer borrowing is introduced, the concept of personal savings as currently defined must of course be replaced by some variant of the concept of financial uses.

<sup>11</sup> Ferber, *op. cit.*, pp. 36 ff.

<sup>12</sup> *Ibid.*, pp. 50-60.



nancial transactions. The deficiencies of the personal savings concept have led to the development of the concept of "deflationary savings."<sup>13</sup> Such a concept refers to net financial savings only (financial sources netted against financial uses). While this constitutes a recognition that residential construction expenditures may have a greater economic effect than financial savings, the implication that the latter are withdrawals from the spending stream is a misleading one.

The consumer exerts his most direct impact on production through his gross national product expenditures. These are the items of expenditure on durable goods, nondurables, services and new home purchases.<sup>14</sup> But when the consumer has other uses of funds he is also exerting an economic effect on productive activity. When he pays his taxes, makes transfer payments, buys securities, saves through financial institutions he is transferring means of payment to other transactors thus potentially stimulating their spending. The only item on the uses side which can truly be called "deflationary" is the net increase in his money holdings.<sup>15 16</sup>

Three distinct categories of uses of funds can be established: gross national product expenditures, "direct financing" of other sector's gross national product expenditures, and financing of other sector's financing activities. In the direct financing of gross national product expenditures we include the uses of funds of tax payments, grants and donations, purchases of existing houses and "second-hand" goods, net purchases of securities and mortgages and that part of insurance premium that goes for benefit payments.<sup>17</sup> In indirect financing of other sector's gross national product expenditures we include the net additions to life

<sup>13</sup> Cf. John B. Lansing and E. Scott Maynes, "Inflation and Savings by Consumers," *Journal of Political Economy*, October, 1952, LX, pp. 383 ff.

<sup>14</sup> Part of insurance premiums representing operating expenses of life insurance companies is also included.

<sup>15</sup> What might be termed the "social accounting approach" to the means of payment and which is implicit in the flow-of-funds accounting analysis is that the money holder is advancing funds to the bank sector and that the latter is borrowing funds from the former. We think that this is an incorrect way to approach the means of payment. The means of payment are unique in that their acquisition does not lead to a money outflow. Rather we would see increases in money holdings as money inflows occasioned by an excess of financial and nonfinancial sources over uses.

So long as increases in money holdings are considered to be "uses" of funds and decreases in money holdings are considered to be "sources" of funds the confusion will continue. We would suggest that the sources and uses of funds statements in flow of funds analysis be treated as "cash" accounts rather than "cash or equivalent" accounts with variations in money holdings being themselves placed outside the sources and uses of funds statement proper.

<sup>16</sup> The limited concept of leakage here developed would seem to hold interesting implications for traditional multiplier analysis.

<sup>17</sup> The transfer payment part of insurance premiums might be assumed to be equal to the insurance benefit receipts of the consumer sector. It was found, however, that if this were done and additions to valuation reserves of life insurance companies then added on, that a residual estimate of operating expenses for life insurance companies gave us a negative figure in some years. For this reason, the transfer payments part of insurance premiums was estimated residually.

insurance policy reserves, additions to time deposits and miscellaneous assets (such as shares in savings and loan associations).

A problem of weighting arises if we are to aggregate the different uses of funds. Otherwise we shall be implying that the consumer by his lending to a financial intermediary or supplying an ultimate spending unit with funds is exerting as much of an economic effect as by his purchases of the gross national product. A feasible system of weights might be to weight by economic distance from gross national product expenditures. A use of funds which finances the gross national product expenditures of another transactor sector is assumed only half as far away from the use of funds of gross national product expenditures as the transaction of indirect financing. If we assign the weight of "3" to gross national product expenditures, the weight given to direct financing would be "2" and the weight assigned to indirect financing would be "1."<sup>18</sup> A weighted total for consumer economic contribution would have its clearest meaning for purposes of comparison with the totals for other economic sectors.

The moneyflows of consumers reflect the money outflows of other transactors and thus the economic impact exerted by the latter. Measure of the unique (net) contribution of the consumer sector by its spending activities would seem to necessitate subtraction of the transactions occasioning money inflows from those transactions occasioning money outflows for each weighted category of transaction. Thus factor shares (receipts from the gross national product) on the sources side would be subtracted from gross national product expenditures, other sources of funds from consumer direct financing of other transactors' gross national product expenditures.<sup>19</sup> No sources of funds will be offset against consumer indirect financings.<sup>20</sup>

<sup>18</sup> The implicit assumption in this system of weights is that the indirect financings of one transactor always finance the direct financings of another. Actually, a transactor may finance the indirect financings of a second transactor and so on endlessly. A system of weights that attempted to allow for the economic distance of successive indirect financings would involve us in an infinite regress. It seems expedient to retain the assumption that indirect financings are only two steps removed from real expenditures.

<sup>19</sup> Factor receipts include the following nonfinancial sources of funds: payroll, interest (less government net interest payments), dividends, and net withdrawals by proprietors. Direct financing of the consumer includes the following nonfinancial and financial sources: government net interest, insurance benefits, grants and donation, tax refunds, net increase in the liabilities of consumer credit, mortgage loans and policy loans. Debt retirement is offset against increases in liability items in estimating the net increase in liabilities.

<sup>20</sup> It is assumed that consumer sources of funds other than factor receipts provide financing for its gross national product expenditures. Under our simplified assumptions only financial institutions will have indirect borrowings as one of their sources of funds. Financial institutions are clearly not ultimate spending units in that the bulk of their uses are financial uses of funds rather than gross national product expenditures. The indirect financing of financial institutions on the sources side of their accounts matches the indirect lending of the consumer and again a proper assignment of economic contribution is established.

A more refined technique for estimating economic contribution would be to determine which sources for the consumer actually did condition its gross national product expenditures and which conditioned direct and indirect financings. In this way both direct and indirect financing sources would be shown for the consumer sector. The "commingling" of different sources of funds would make this very difficult in practice.

The consumer by this analysis is seen to make his spendings contribution in two different ways. First, he contributes to productive activity by bringing moneyflows "closer" to spendings on the gross national product. He does this by converting "lower-weight" sources of funds into "higher-weight" uses of funds. Thus the transactor who borrows, and spends the proceeds on the gross national product will show a positive contribution. Conversely the contribution of the consumer sector will be negative if it converts "higher-weight" sources into "lower-weight" uses.

But there is another important factor explaining economic contribution. Neglecting weights, the consumer can spend more on gross national product, direct and indirect financings than is secured from these sources. He can do this by reducing his money holdings. We may call the effects of changes in money holdings, the "moneyflows effect." Net economic contribution thus adds up to the total of the "conversion" and "moneyflows" effects.<sup>21</sup>

Applying our criteria to the data for 1939-53, it is possible for us to say that the net economic contribution of the consumer sector was negative in all these years except in 1939 and 1953. This can be seen from Table II col. (6). Only in the first year do gross national product expenditures exceed factor receipts and then by less than a billion dollars. In 1953, the weighting of "2" assigned to net direct financings is sufficient to make net economic contribution positive. The greatest negative contribution occurs, as would be expected in the war years. The excess of gross national product receipts over expenditures overwhelms the positive amounts of net direct and indirect financings. The negative contribution (except in 1948 and 1949 when money holdings increased) is explained by both "conversion" and "moneyflows" effects being negative. Again, as in the case of gross economic contribution the figures would become most meaningful in comparison with similar figures for other sectors.<sup>22</sup>

<sup>21</sup> Copeland in his pioneering moneyflows study develops a different measure of the moneyflows effect. In his "discretionary hypothesis" (cf. Copeland, *op. cit.*, pp. 253 ff.) a sector is said to exercise initiative in increasing moneyflows if its gross national product expenditures are increasing and if it showed financial sources of funds. Such a transactor is called a "bull." A transactor on the other hand whose gross national product expenditures were decreasing and which experienced financial uses of funds is said to exercise a depressing influence on moneyflows and to be a "bear." While Copeland is purportedly explaining variations in moneyflows, his emphasis is on moneyflows via the gross national product. This overlooks the role in moneyflows of all other kinds of transactions. If we include the latter it would seem necessary to end up with a "net increase in money holdings" criterion for transactor initiative in affecting moneyflows.

The moneyflows effect developed in this paper is an unweighted moneyflows effect. It does not weight decreases in money holdings by the "weighted average" of the weights for uses of funds nor does it multiply increases in money holdings by the weighted average of the weights for sources of funds. Such weightings might be advisable since decreases in money holdings are spent on uses with different weights and without such weights the moneyflows effect tends to be reduced in favor of the conversion effect. Similarly, if we fail to weight consumer increases in money holdings (the negative moneyflows effect) by the weights for sources of funds we overstate the sources that are converted into uses of funds and thus tend to underestimate the conversion effect.

<sup>22</sup> The author is in the process of developing estimates for the other sectors of flow of

TABLE II  
Net Economic Contribution of the Consumer Sector  
(Data in billions of dollars)

Year	(1) Net GNP Exp.	(2) Col. (1) (X)3	(3) Net Direct Financing of GNP Exp.	(4) Col. (3) (X)2	(5) Indirect Financing of GNP Exp.	(6) Net Econ. Contr. (2) + (4) + (5)	(7) Net Money Outflows = -Net Increase in Money Holdings	(8) Conversion Effect Col. (6) - (7)	(9) GNP Receipts (Factor Receipts)	(10) Col. (6) + (9) Net Econ. Contr. (includ- ing factor receipts)
1939	.7	2.1	-3.1	-6.2	6.3	2.2	-1.9	+4.1	62.0	64.2
1940	-.2	-.6	-3.3	-6.6	6.5	-.7	-1.4	+7	67.6	66.9
1941	-15.5	-46.5	—	—	6.3	-40.2	-3.5	-36.7	82.8	42.6
1942	-22.7	-68.1	14.8	29.6	7.3	-31.2	-5.6	-25.6	105.1	73.9
1943	-42.4	-127.2	44.4	88.8	12.2	-26.2	-6.4	-19.8	131.9	105.7
1944	-48.7	-146.1	30.0	60.0	16.3	-69.8	-7.3	-62.5	145.8	76.0
1945	-40.6	-121.8	24.6	49.2	19.1	-53.5	-6.0	-47.5	148.4	94.9
1946	-15.9	-47.7	4.9	9.8	15.1	-22.8	-2.8	-20.8	152.8	130.0
1947	-11.0	-33.0	7.1	14.2	13.9	-4.9	-.5	-4.4	169.2	164.3
1948	-12.3	-36.9	8.4	16.8	13.1	-7.0	+1.2	-8.2	185.6	178.6
1949	-8.2	-24.6	2.3	4.6	14.1	-5.9	+2.0	-7.9	182.4	176.5
1950	-6.4	-19.2	-3.4	-6.8	15.5	-10.5	-.8	-9.7	196.3	185.8
1951	-20.5	-61.5	13.0	26.0	18.7	-16.8	-2.2	-14.6	222.9	206.1
1952	-28.3	-84.9	14.5	29.0	23.6	-32.3	-3.3	-29.0	240.4	208.1
1953	-18.0	-54.0	15.9	31.8	26.0	3.8	-.4	4.2	251.8	255.6

Source: Flow of Funds, *op. cit.*, p. 73.

There is still another aspect of economic contribution which can be measured by flow funds analysis. Our measurement of contribution has so far been limited to the expenditure side of economic activity. The consumer sector makes a well-known contribution to production activity through providing its productive services. This contribution can be measured by reintroducing factor receipts on the sources of funds side. (For other sectors, "gross product originating" in these sectors could be introduced). By this addition, the contribution of the consumer sector would become positive for all years and would necessarily exceed the total contribution of any other sector.<sup>23</sup> This total contribution is shown in column (10) of Table II.

#### IV. SUMMARY AND CONCLUSIONS

In this paper we have attempted to show some of the advantages of the moneyflows approach over the "national income" approach to a study of the consumer sector. We are provided with considerably more information than

funds analysis. The estimates shown in TABLE II for the consumer sector are in current dollars. For comparative purposes it would be desirable to express the estimates for all sectors in constant dollars.

<sup>23</sup> This is with the weighting of factor receipts at unity. To be consistent with the weighting of real expenditures, factor receipts and "gross product originating" should also be given a weight of three in the various sector estimates.

is given us by national income accounting. This additional information makes it possible for us to develop "financial uses" functions in the place of the conventional savings functions. It is possible that such functions, by making financial sources an explanatory variable, may have more predictive value than the conventional savings functions. They also clearly suggest that financial sources exert their effect on nonfinancial uses rather than on financial uses. This has considerable relevance for monetary policy.

The moneyflows approach lends itself to a study of the spendings impact of the consumer. On the basis of flow of funds data spendings impact can be measured in terms of the "moneyflow effects" and "conversion effects" of consumer uses of funds. Estimates for the consumer sector 1939-1953 suggest that except for two years, the contribution of the consumer sector in terms of these criteria was a negative one. The "uses" approach to economic contribution can be supplemented by a "sources" approach. Adding on factor receipts serves to overcome the negative spendings effect and to make the consumer sector contribution a positive one.



## TRANSPORT REGULATION AND THE RAILROAD PROBLEM

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Government transportation policies are among the fundamental determinants of the amount and character of investment in transport facilities and of the price and service characteristics of this industry. These policies are significantly conditioned by what has historically been called the "railroad problem." Its vital impact, not only for the railroads themselves but all along the transportation front, warrants a clear-cut indication of the measure used to identify and measure the problem. This paper undertakes to evaluate this measure and to suggest regulatory policy changes calculated to dispel the vagaries and inconsistencies of its application.

### THE MEASUREMENT OF THE RAILROAD PROBLEM

The railroad problem comes into focus in a number of different contexts. During the last quarter century it has been considered repeatedly in rate-level cases in which rail carriers have appealed to the Interstate Commerce Commission for authority to apply across-the-board percentage increases in rates to cure a revenue stringency. The problem is continuously called to public attention through railroad institutional advertising and other releases which bemoan the critical condition of the companies as reflected by their inability (or the unwillingness of the public regulatory authority to permit them) to earn at least a 6 per cent return on their invested capital. Further expression is found in the Congressional hearings held in connection with the numerous legislative proposals related to transportation—many of which are prompted by the chronic railroad problem.<sup>1</sup> The most recent example is railroad testimony supporting regulatory changes proposed by the Presidential Advisory Committee on Transport Policy and Organization.<sup>2</sup> An important indicator of the need for revamping controls is the low rate of return realized by the railroads.<sup>3</sup>

Although these settings are quite diverse, the landscape is basically the same. The cause for alarm stems from the inability of the railroads to earn some rate of return on investment which is regarded as adequate. This deficiency marks

<sup>1</sup> For example, of the 37 transport bills introduced in the 82nd Congress, about half were clearly designed to reduce the railroads' competitive burden, most being aimed at extending regulatory controls over a number of phases of motor transportation.

<sup>2</sup> *Revision of Federal Transportation Policy*, A Report to the President. The group is commonly called the Weeks' Committee since it was headed by Secretary of Commerce Weeks.

<sup>3</sup> *Transport Policy and Organization*, Hearings before a subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, 84th Congress, 1st Session, p. 127.

the existence of the problem and the extent to which the realized income falls short of a satisfactory figure tends to measure its severity.

Before considering the efficacy of this measure, a brief review of its mechanical application may be in order. The relevant income figure is called "net railway operating income," which is reached in the income statement after operating expenses, rents, and taxes are deducted from operating revenues. In general terms, it is the sum available to reward those who have contributed investment capital to the enterprise, both lenders (bondholders) and equity owners (stockholders). Compensation to capital suppliers is clearly a long-run cost of doing business; if such reward is not forthcoming or is inadequate in terms of alternative investment opportunities, capital sources will dry up and the resulting capital rationing will stifle the industry. Because of the heavy investment in fixed plant, the return is a significant element of cost. In the recent past net railway operating income has approached 15 per cent of operating expenses.<sup>4</sup>

Income is a datum which must be related to some investment figure to produce a percentage indicating the rate of return. In the application of the return formula, the investment figure is also treated as a datum, although it is clearly not so objectively measurable as income. The investment measure employed is the going-concern valuation of the carrier plant established by the Interstate Commerce Commission by inventorying the assets and pricing them out at original cost, cost of reproduction, or some compromise of the two alternatives. It may be gratuitous to note that the resulting accounting "valuation" does not purport to represent economic "value," which is a function of the earning capacity of capital assets; it simply provides a rate base or guide for measuring the legitimacy of overall earnings. As a matter of fact, the intrusion into this guide of any of the influences which determine true market value introduces an element of circularity and results in its being compromised for the intended purpose.<sup>5</sup> It is not presently necessary to consider the compromises and judgment elements which inevitably cloud these valuations nor the difficulties of determining what actual rate constitutes an adequate return. The main interest of this analysis is the role of the fair return concept itself.

#### HISTORY AND STATUS OF THE FAIR RETURN DOCTRINE

The fair return doctrine was originally employed as a device to measure legitimate limitations on the earnings of a natural monopoly. As promulgated by the Supreme Court in *Smyth v. Ames*<sup>6</sup> in 1898 it meant that railroads (and other utilities) were entitled to a fair return on the fair value of their invested property; anything less was confiscatory and a violation of the "due process" clause. The doctrine was given statutory form in the Transportation Act of 1920, which enjoined its positive use by the Commission as a means of insuring

<sup>4</sup> Association of American Railroads, *Railroad Transportation: A Statistical Record, 1921-1953*, p. 11.

<sup>5</sup> That is, the rate of return would always coincide with the rate at which the earnings were capitalized.

<sup>6</sup> 169 U. S. 466 (1898).

financial health. Using a test for detecting confiscation as a measure of revenues required for financial stability may appear to be inconsistent. But this inconsistency arises from the use of the tool and not from its fundamental nature.<sup>7</sup> The device could be consistently used in both judicial and administrative settings—respectively detecting confiscation and testing earnings reasonableness—by the simple expedient of differentiating between the return rate which barely avoided confiscation and that which yielded a socially desirable level of earnings. But as a matter of practical administration, Commissions have tended to identify the two and to accept as maximum reasonable earnings those which avoid the charge of confiscation. The tool fashioned to place a floor under revenues has performed double duty in establishing ceilings over them.

This procedural weakness is identified primarily with state regulation of local utilities whose earnings have required limitation. Since 1920 particularly, the Commission has not viewed its role in terms of eliminating monopoly profits. Its more general problem has been to contrive rate adjustments which will yield rail revenues adequate in terms of the objectives of the 1920 Act. In its earliest experience with the 1920 rule of rate making it ran squarely into the bogie of price fixers—an unfriendly demand elasticity. In response to the new rate-making rule, the Commission authorized general rate advances in 1920.<sup>8</sup> This action failed to generate the desired revenue increments and two years later rates were reduced.<sup>9</sup>

As a statutory rule of rate making delineating earnings floors, the fair return approach proved to be unworkable. It suggested to petitioning carriers in general rate-increase applications a mechanical relationship which failed to take adequate account of the elasticity of demand for the services being priced. While the Commission had learned its lesson, apparently the carriers had not. In the railroad view, the rate-making rule required the Commission to authorize rate increases in the face of earnings found to be inadequate in terms of the fair-return test. The Commission appealed to the Congress for a revision of the rule which would dispel this notion. In the Emergency Transportation Act of 1933 the fair-return clause was eliminated in favor of a more general guide looking to considerations of revenue needs for adequate service and the effect of rate proposals on traffic volume and revenues. It will be noted that this legislative change did not constitute statutory repudiation of the fair-return concept and this continued to be the primary test of revenue adequacy. In any case, such a

<sup>7</sup> This distinction seems to escape a number of observers. J. Haden Alldredge, later to become a member of the Commission, stated that "the test of confiscation is the adequacy *vel non* of the return on the value of the property used to perform the service covered by the rate or schedule of rates, while the determination of a just and reasonable rate or schedule of rates involves many other considerations." *Rate Making for Common Carriers*, p. 34. Former Commissioner Aitchison quotes Alldredge approvingly as having "exposed the implicit fallacy in this logical leap" from measuring confiscation to testing earnings reasonableness. Clyde B. Aitchison, *Fair Reward and Just Compensation, Common Carrier Service* (Washington: Association of Interstate Commerce Commission Practitioners, 1954), p. 25.

<sup>8</sup> *Increased Rates, 1920*, 58 I.C.C. 220 (1920).

<sup>9</sup> *Reduced Rates, 1922*, 68 I.C.C. 676 (1922).

repudiation would not have held up constitutionally since the Courts still clung to the *Smyth v. Ames* view that fair return on fair value measured the minimum entitlement of regulated utilities.

The removal of the statutory shackles of fair return in 1933, however, was followed a decade later by the elimination of the judicial shackles. In the Natural Gas Pipeline Case<sup>10</sup> and the Hope Case<sup>11</sup> handed down by the U. S. Supreme Court in 1942 and 1944, the judicial role in determining earnings reasonableness was sharply curtailed. The courts would not insist upon a showing based on a fair return on fair valuation in earnings cases, but would, in review situations, accept any reasonable conclusions reached by the regulatory commissions. Since then, neither legislative nor judicial considerations require the application of the fair return doctrine to revenue situations.

It is sometimes suggested that the changed attitude of the courts has virtually eliminated the fair return test in Commission adjudication of railroad earnings.<sup>12</sup> But certainly the Commission has not rejected this device as it was rejected by the Congress in 1933 or by the Courts a decade later. In all of the Commission's general rate level hearings since the Hope Case, explicit recognition has been given the proposition that the level of realized return warranted a rate advance. And the carriers themselves continue to depend upon this presentation. In the most recent general rate level proceeding the railroads adduced substantial amounts of evidence to establish that "... recent increases in annual costs will result in a rate of return far below that found by the Commission to be substandard and inadequate."<sup>13</sup>

A "substandard" rate of return on past investment symbolizes revenue stringency to carriers, the Commission, and many legislators. An "adequate" rate of return is still a positive administrative goal and accordingly influences transport policy at both the legislative and administrative levels.

Aside from the present potency of the fair-return tool, revenue needs in general rate proceedings are tested in terms of total costs incurred. In an industry characterized by heavy capital investment of long life, the costs to be recovered will reflect significantly the amount and character of investment that has accumulated over the years. The intimate association between historical capital commitment and the costs of today and tomorrow is the relevant matter for analysis which follows. It is not essential that the tie be forged by the exclusive use of the fair return guide to earnings reasonableness. But the persistent vitality of this guide and its symbolization of testing present earnings in terms of historically conditioned costs, make it a useful focal point.

#### THE FAIR RETURN DOCTRINE AND RATE AND EARNINGS FLOORS

The fair-return doctrine implies that the public purpose in rate regulation is to provide revenues which will cover all costs actually incurred in the opera-

<sup>10</sup> 315 U.S. 575 (1942).

<sup>11</sup> 64 S. Ct. 281 (1944).

<sup>12</sup> Cf. Aitchison, *op. cit.*, p. 32.

<sup>13</sup> Brief of the Railroads in Ex Parte 196, *Increased Freight Rates, 1956*, Part I, p. 4.

tion of the plant, including a given level of reward to those who supplied the capital. The limitations of cost as a standard for price fixing are well known. In addition to the difficulties of cost determination (especially, in the instant case, the uncertainties surrounding the determination of a fair valuation of assets), such a procedure implies that market prices generally are cost determined. On the contrary, as economists are aware, costs are as nearly price determined. If prices and costs are out of line, changes in output, with resulting shifts in factor employment, the prices of productive agents, and commodity prices will tend to bring the two again into equilibrium. In this equilibrium costs and prices tend to coincide, but it cannot be said that either is the independent variable. It is a mutual relationship. For individual producers, chronic disparity between market-dictated prices and company costs may require asset revaluation with appropriate alterations in related annual costs.

This brief review is not intended to imply that the processes of earnings control are necessarily designed to duplicate the competitive solution. But to administer price regulation in what has come to be a significantly competitive market in a way which departs sharply from the competitive solution invites the present ambiguities in transport earnings control.

The accounting valuations are regarded as an independent variable. If the ratio between earnings and valuations yields a return rate held to be too low, this is commonly accepted as conclusive that the earnings are inadequate. But an alternative interpretation must be considered. If dictated by the market in a competitive environment, earnings may well represent the independent variable. The market is thus providing an alternative "valuation" which represents true economic value.

If the accounting valuations ( $AV$ ) necessarily avoid considerations of earning capacity, any conformity between this figure and economic value ( $EV$ ) is completely fortuitous and quite unlikely. As a matter of fact, equality would be maintained only if there were no mistakes in judgment in investment decisions, no changes in market conditions, and if uneconomic facilities were abandoned and written off the valuation account. The more logical case is that  $AV < EV$  or  $AV > EV$ . The former relationship spells the problem of the limitation of monopolistic earnings since, in the absence of public control, the market would sustain revenue levels regarded as exploitative. This was the case when the fair return doctrine was spawned by the Court in *Smyth v. Ames*. Quite another type of problem arises where  $AV > EV$ . In this situation, the market consensus decrees an earning capacity which fails to measure up to the values arbitrarily placed on past applications of capital.

A transitional shift in the  $AV$ - $EV$  relationship is represented diagrammatically in Figure I, where the  $x$  axis represents time and the  $y$  axis the per cent of accounting value.  $AV$  is therefore a horizontal line at 100 on the ordinate. In this illustration, the  $EV$  curve starts above  $AV$  and then falls below it. This diagram is not intended to portray a specific historical trend in which the  $AV$ - $EV$  gap becomes progressively wider with the passage of time. But it does suggest a basic historical change in the relationship between  $AV$  and  $EV$ . To the left of the



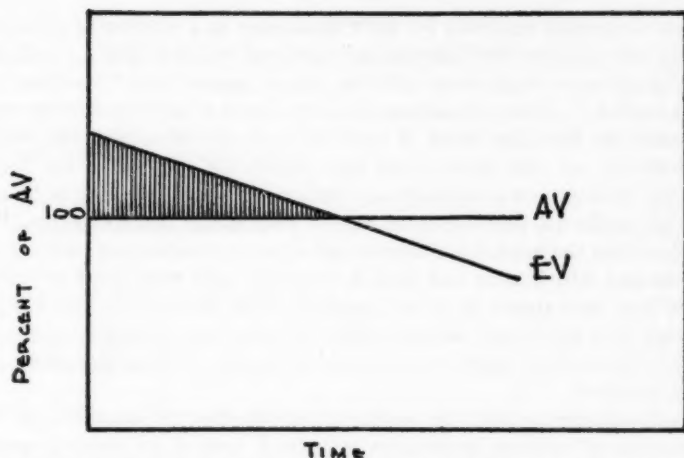


FIG. 1. Alternative relationships between account valuation and economic value.

intersection, the problem of public control is to rub out the shaded area by imposing earnings limitations. To the right of the intersection, the realization of an adequate rate of return on AV requires a regulatory program designed to fill in the gap by forcing the market to sanction past investment.

It is clear that the present market, by failing to yield revenues which produce a return rate approximating that of comparable industries, does not sustain the accounting valuations. Although the Interstate Commerce Commission has provided no formal measure of an adequate return, there is abundant evidence that the Commissioners, along with many other observers, regard the recent record as one of inadequacy. In recent hearings on the railroads' proposal to make permanent the Ex Parte 175<sup>14</sup> increases, Commissioner Mitchell, citing a 1954 return of 6.8 per cent for American Telephone and Telegraph Company, stated that the rail return for that year (3.3 per cent) was "entirely too low."<sup>15</sup> Consistent with this view, the Commission has generally granted the increases requested by the railroads in the postwar rate-advance cases. Despite this general acquiescence, the railroads as a group have failed to achieve what is generally regarded as an adequate return.

Commission compromises of the railroad proposals have not generally been based on a denial of the need for added revenue, but on the belief that market resistance would nullify further rate increases. Confirmation of this view is found in the fact that over a wide range of traffic, the carriers have not imposed the full measure of rate increases authorized.<sup>16</sup> Such adverse market pressures

<sup>14</sup> A designation for the 1951 proceedings in which a temporary increase authorization was handed down. These increases have now been made a permanent part of the rate structures.

<sup>15</sup> *Traffic World*, October 8, 1955, p. 63.

<sup>16</sup> This is illustrated by the fact that the authorized increase of 15 per cent in *Increased*

have been recognized explicitly by the Commission in a number of pronouncements. On one occasion the Commission expressed concern that an authorized advance in rail rates might be nullified by carrier competition. "A serious problem is presented . . . when an advance in motor rates is not required by motor-carrier costs. On the other hand, if such rates are not advanced, the resulting spread between rail and motor rates may defeat the purpose of the increase granted the railroads or precipitate the reductions of rail charges, with added burdens on traffic not seriously competitive with motor transportation."<sup>17</sup>

It is clear that the market has substantial voice in determining railroad earnings levels and return rates and that it currently fails to support a "normal" return on past investment. It is not, however, clear whether this market judgment means that significant portions of the rail plant are inherently uneconomic or whether the market response is distorted by faulty public policy. Both forces could be involved.

Changed circumstances in the transport market since the commitment of the major portion of railroad investment may have limited its earning capacity. Such developments include relocation of industries and exhaustion of resources. But perhaps most significant of all has been the belated advent of the competition of newer agencies, all of which have made their mark on the revenue potential of historical rail investment. Despite the relatively high level of investment in recent years, the bulk of capital commitment antedates the rise of interagency competition and the decentralization movement in industry.

Relevant in this connection is the amount of "old" and "new" investment in rail facilities. According to the computations in the accompanying table, about four-fifths of net rail investment as of 1953 had been placed before 1930 and therefore antedated the drastic market changes of recent years. Accordingly, only about 20 per cent of the valuation accrued in the present competitive environment. And it may be that even this figure overstates the economic legitimacy of the accounting figure. Some of the recent investment may entail sending "good money after bad"—improving facilities which should be written off. Further, some capital commitments doubtless would not have been undertaken in the absence of regulatory policies aimed at forcing market sanction of the investment. In addition, the market situation has changed rapidly since 1930. Much of the investment of the 1930's might not have been made in the light of subsequent development of competing agencies and alterations in production and distribution patterns.

Although such environmental changes are significant conditioners of earning capacity, their importance is offset to an indeterminate degree by the secular course of rail traffic. Despite the unfavorable market developments, postwar

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*Freight Rates, 1951* (Ex Parte 175), 281 I.C.C. 557, resulted in a much smaller advance in the index of average interstate freight rates. The index (1950 = 100) advanced only from 102 in 1951 to 109 in 1952 and 111 in 1953. Interstate Commerce Commission, Bureau of Transport Economics and Statistics, *Indexes of Average Freight Rates on Railroad Carload Traffic, 1947-1953*, Statement No. 555, February, 1955, p. 16.

<sup>17</sup> Interstate Commerce Commission, *Annual Report, 1951*, p. 4.

TABLE I  
CHANGES IN CLASS I RAILROAD BOOK INVESTMENT, 1930-1953

Investment Item	Amount (000)
Total capital outlays, 1930-53.....	\$14,509,127
Increment in total investment, 1930-53.....	-6,509,295
Gross substituted investment.....	7,999,832
Accrued depreciation increment.....	-4,823,166
Net substituted investment.....	3,176,666
Net investment increment, 1930-53.....	2,493,134
Total net investment, 1930-53.....	5,669,800
Total investment, 1953.....	26,669,045

Source: Computed from Association of American Railroads, *op. cit.*, p. 12.

rail volume has set peacetime records. Traffic density<sup>18</sup> on class I roads increased from 4,815 in 1930 to 7,746 in 1953.<sup>19</sup> Since the impact of the market changes on rail rates cannot be assessed precisely, it is impossible to determine from the foregoing considerations the true economic status of the rail plant.

The uncertainty surrounding this question is compounded by the fact that public policy itself introduces distortions which may themselves be the proximate cause of the present *AV-EV* gap. Without such public intervention, the level of earnings might validate the accounting valuations. This indeterminate role of government involves action in the realm of both subsidy and regulation.

Notable in this connection are the subsidy programs which provide toll-free facilities for water and air carriers. It is further questionable that commercial trucks are currently self sufficient in their support of highway facilities. The limiting effect on the earning capacity of the unsubsidized rail plant is apparent. The market also speaks indistinctly because of regulatory barriers, being muffled by regulation of both price ceilings and price floors. With rail rates bumping against authoritative ceilings, it is difficult to say just what level of earnings the market would provide. With freedom to compete in price sharply curtailed, an even more serious barrier to market dictates is imposed. If the effect of these restrictions is to deprive the carriers of net earnings which the market would award them, we are lost in a basic dilemma. It is impossible to determine whether inadequate returns (or the *AV-EV* gap) reflect the inherently uneconomic character of portions of the rail plant, faulty public policy, or both.

Two alternative approaches to the fair return problem of the railroads are open—to continue along present lines or to recognize the fundamental authority of the market place. The first entails efforts to force market validation of the accounting valuations. This involves protectionism based on restrictions which are questionable on a number of counts.

<sup>18</sup> Measured by net ton miles per mile of road per day.

<sup>19</sup> Association of American Railroads, *op. cit.*, p. 28.

Current programs of minimum rate regulation and entry control are manifestations of protectionism. Authoritative price floors go far beyond the elimination of ruinous and predatory pricing, featuring instead efforts to maintain "established rate structures" and achieve a preconceived level of earnings for transport companies. Entry controls are administered necessarily and logically with an eye on the effect of proposed operations on established carriers. Increasingly, the Commission has denied entry to motor carriers on the ground that existing rail service is adequate.<sup>20</sup> And one sees evidence of pressure for further restrictions. Uncontrolled private transportation by motor truck is a recent target because it sets limits on rate increases by the regulated-carrier fraternity. Recurrent proposals to restrict or eliminate the exemption from regulation of the truck transportation of agricultural commodities and water transportation of bulk commodities are other cases.

The mildest criticism of protectionism is that it has not been particularly effective. Railroad return rates are still inadequate. Complete effectiveness would require much bolder action than has yet been attempted. But aside from its effectiveness, protectionism is hard to justify in economic terms. It is predicated on the proposition that the market will not support the services required of the rail transport system. In the absence of artificial barriers to profitability, this appears unlikely. So far as commercial uses are concerned, there appears to be no reason why the market should be more niggardly toward transport than other economic activities. Equity capital issues will sell—at a price; but not at a price which reflects a *pro rata* share in assets that are overvalued in terms of their true economic value based on earning capacity.

A special case may be made for national defense considerations. While the market should be expected to support the rail plant investment required for commercial needs, it may not support the surplus facilities required national defense. But vague policies of protection are not the appropriate answer. In the first place, such an approach does not guarantee that revenues will be forthcoming in adequate amounts or that they will be employed for the specific defense purposes for which they are required. The determination of these needs should be precise and should be based on specific defense requirements. Secondly, protection is an inappropriate tool because it places the burden on the transport industries and their customers. Defense facilities—whether in transport or armaments—should be provided from the defense budget.

Even if the market should be amenable to protectionism and contribute the revenues required to validate AV—and it may well refuse to do so in a competitive environment where private motor and water transport is a substantial alternative—the costs are great. Such a program forestalls industry rationalization from such devices as consolidation, abandonment, and reorganization. In addition to protecting uneconomic investment, it fosters chronic overinvestment, with a general inflation of transport costs. The logical corollary of protectionism

<sup>20</sup> Report of the Select Committee on Small Business, United States Senate, *Competition, Regulation, and the Public Interest in the Motor Carrier Industry*, Senate Report No. 1693, 84th Congress, 2nd Session (Washington: Superintendent of Documents, 1956), p. 10.

is closer public control of costs, investment, pricing, and other essentially managerial problems.

Protectionism to offset subsidy stands on no less shaky ground. The arguments for the elimination of subsidies are highly convincing and are accepted by most students of transport problems. Subsidy creates inequities, to be sure, but it provides no justification for protectionism. The fact that some transport costs are borne out of general revenues does not justify doubling the burden by adopting regulatory policies designed to offset the impact on less favored agencies. If subsidy is hard and fast policy, regulation and investment in rail plant should be adapted to it. This is not to deny, however, that it would be much sounder to eliminate the subsidy as nearly as possible through user charges and other policy changes.

The protectionism required to force market sanction of the accounting valuations is quite unpalatable to all but the direct beneficiaries—which includes not only the railroads themselves but their motor and water competitors. Accordingly, some of the implications of the alternative course—recognition of the authority of the market—should be explored.

#### A WAY OUT

Railroad earnings control is presently in a dilapidated state. Competition is sufficiently active to prevent market sanction of arbitrary accounting valuations by providing a "normal" return on past investment. On the other hand, the present pattern of regulation embraces restrictive characteristics which prohibit the market from providing strictly economic answers. One way out of the dilemma is to free the market so it can provide this normal economic function with at least more precision than it can do at present. This does not entail the elimination of all regulation, but a switch from the perverted objective of the protection of *competitors* to the more legitimate objective of the protection of *competition* to preserve its usefulness as a control device.<sup>21</sup>

A comprehensive analysis of the extent and character of regulatory changes which are required to permit the market (through competition) to speak effectively, while maintaining essential public safeguards, is the appropriate subject for a separate study and one which is receiving substantial attention on many fronts. But without establishing a formal program of regulatory revision, it is useful to indicate some important considerations in this realm.

With ceilings placed on rail rates, the amount and character of rail plant investment which the market will support remains uncertain. A strong case may be made for managerial freedom so long as fundamental public interests are not sacrificed. The unlikely result of the exaction of monopoly profits can be eliminated by resort to the fair return test, its historic and enforceable role. But freedom in this realm of pricing could result in the substitution of rate increases for efficiency advances in the absence of full market pressures. It is not at all certain that present institutional arrangements would adequately protect the

<sup>21</sup> Professor Pegrum recounts the methods of protecting competitors in his article "The Economic Bases of Motor Carrier Regulation," *Land Economics*, August, 1952, pp. 244-263.



public interest in this respect. Pricing by each agency is characterized by concerted action exercised through rate bureaus. In addition, one must reckon with the price leadership arrangement, facilitated by the rate bureau mechanism, which characterizes recent history. General rate advances by the railroads are almost inevitably followed by comparable increases by the other surface carriers.<sup>22</sup> Greater market freedom in determining the amount of financial support to be accorded the rail plant must face and deal with these problems.

A notable characteristic of rate level increase authorizations is that actual advances are not spread uniformly over all traffic ranges because of market pressures.<sup>23</sup> In such circumstances the main issue in rate increases—assuming revenues are not excessive—is rate relationships. There is great concern that prices of non-competitive services will be made unduly high in order to keep rates down on competitive traffic.<sup>24</sup> But some shift in the distribution of the overhead burden is the inexorable result of agency competition. It is inescapable that as competitive traffic is weaned away or rate reductions are made to hold it, the railbound traffic will be faced with the necessity of bearing an increasing share of the support of the rail plant. Prohibiting rate reductions or requiring increases on competitive traffic will not alleviate this burden, but will in fact intensify it because of the resulting loss of traffic and of the overhead contribution which it makes. Alleviation can come only from artificially supporting rates on competitive traffic of all agencies—rail and non-rail alike. Holding down the rates on non-competitive traffic therefore requires an umbrella to preserve to the railroads a given share of the competitive traffic if rail costs or unrealistic pricing policies do not otherwise permit them to hold such traffic. If debarred by costs, this umbrella is of highly questionable economic validity. If defective rate regulation is the culprit, it should be reexamined.

One area requiring reexamination is minimum rate control. The administration of the minimum rate power is dedicated to limiting competitive reductions by a carrier to a level "no lower than necessary to meet the competition." This has commonly resulted in the rival agencies' sharing the traffic for which the rates are at issue. If an operational or technological improvement reduces a motor carrier's cost for handling a certain traffic category from \$1.00 to 50 cents per hundred pounds and the rail rate is 75 cents, the rail charge would establish the general limit for the motor-carrier rate reduction. The specific permissible adjustment would depend on the relative service quality of the rival carriers.

<sup>22</sup>As a classic example, Southern Territory railroads announced early in December, 1955, that they were applying for a general increase of 7 per cent. Shortly thereafter, southern motor carriers announced plans to impose a basic increase of exactly the same percentage. *Traffic World*, December 17, 1955, p. 19.

<sup>23</sup>For example, the Commission's rate index in 1953 (1950 = 100) was 112 for the "manufactures" class, but the index for individual groupings ranged from 103 for automobiles to 115 for such commodities as scrap iron. Interstate Commerce Commission, Bureau of Transport Economics and Statistics, *Indexes of Average Freight Rates on Railroad Carload Traffic, 1947-1963*, Statement No. 555, February, 1955.

<sup>24</sup>This commonly-made distinction represents an oversimplification. The boundaries between the two categories (competitive and non-competitive) are not, of course, inexorably fixed, but are subject to alteration by rate adjustments.

The same limits are placed on rail reductions. This adjudication of competitive rates deprives shippers of legitimate gains and distorts economic traffic allocation and investment patterns. The market is debarred from contributing to rational economic decisions. In addition, such a policy appears to violate the spirit of the statutory rule of rate making enunciated by the Congress for the guidance of the Commission. This rule requires a consideration of the effect of proposed rates on traffic movement of the carrier (or agency) *whose rates are at issue*. Congressional intent would appear to preclude the pegging of rail rates with an eye on the effect of these charges on the traffic of competing motor carriers.

To an important degree the hiatus between costs and rates arises from regulatory efforts to preserve as nearly as possible rate structures predicated on value of service, the classic tool of price discrimination. As is well known, this device was historically employed by the railroads to maximize traffic and minimize unit costs by allocating the large overhead burden on the basis of relative demands. This pattern was adopted by the motor carriers in the price leadership situation previously mentioned.

Value-of-service pricing is foreign to the inherent economic characteristics of motor transportation. This industry is not characterized by a large overhead cost burden to be distributed over various services on the basis of relative demand.<sup>25</sup> Although performing no true economic function, it could be maintained in the early years of motor transportation because of railroad lethargy in responding to the competition of the newer agency. Since regulation, it has been preserved by an administration of the minimum rate power which attempts to maintain established rate structures. In general terms this embraces the notion that rate floors should reflect commodity values and other service-value indicators.<sup>26</sup> Value-of-service pricing by motor carriers not only requires regulatory connivance, but has adverse effects on the carriers through loss of traffic to contract carriers and private transportation.<sup>27</sup>

The economic monstrosity created by value-of-service pricing by motor car-

<sup>25</sup> There is some occasion for demand-conditioned pricing for motor carriers in joint costs. Notable is the round-trip aspect. But most motor carrier discrimination is not based on this factor. Rate structures are typically formulated on a regional basis and so cannot take much account of individual carrier back-haul problems. And where carriers do try to make a case they are commonly slapped down by both their rate bureaus and by the Commission. One can probably make a good case for more demands pricing in this connection. Legitimate joint-cost pricing is economic and does not introduce the estrangement of rates and costs inherent in the establishment of price floors on the basis of value of service. It really reflects costs, but takes the out and back movement of capacity as a "package."

<sup>26</sup> See, for example, *Tobacco, North Carolina Points to Southern Points*, 280 I.C.C. 767. The Commission observed in this case: "While both rail and truck rates proposed may be reasonably compensatory, it is doubtful that they would contribute their fair share to the transportation burden considering the obviously high value of the traffic. To permit a further reduction by either form of transportation, or both, would only tend to increase still further the transportation burden on other traffic without giving due consideration to value of service on the traffic." *Ibid.*, p. 774.

<sup>27</sup> See George W. Wilson, "Effects of Value-of-Service Pricing Upon Motor Common Carriers," *Journal of Political Economy*, August 1955, LXIII, pp. 337-44.

riers is illustrated by one of the regional cost studies conducted by the I.C.C. staff. In 1950 Southern Territory truckers carried blocks of traffic for which the revenue relation to *out-of-pocket costs* ranged from 25 to 302 per cent.<sup>28</sup> Clearly, radical changes in such rate structures are required to achieve reasonable accord with economic reality.

Basing motor-carrier rates on costs would open the way for real price competition on the basis of relative economy. Interagency competition is presently enmeshed in value-of-service complications and the protection of competitors, rendering comparative costs impotent as a traffic allocator. Although not premised in terms of an attack on value-of-service pricing as such, recent legislative proposals stemming from the Weeks' Committee Report contemplate a substantial extension of the range of cost-based price competition.<sup>29</sup> The proposals are designed to require the Commission to permit competitive reductions which pass *cost tests*. Such an approach would eliminate consideration of the effect of rate proposals on competing carriers, and thereby avoid present market sharing without regard to competitive costs. This legislative proposal has been and will be widely debated and closely analyzed, but a few observations will be useful for present purposes.

Opposition to more active price competition comes primarily from the railroads' surface competitors and shippers of "rail-bound" traffic. The shipper group, as previously indicated, stands to gain from railroad rate reductions on competitive traffic which induce the movement of profitable tonnage. Their present position would deteriorate only if existing rate structures embrace an umbrella which holds up competitive rates artificially. This is, to be sure, the indicated result of present regulatory efforts to "preserve established rate structures." The ultimate effect on these shippers of relaxing competitive restraints depends on the railroads' success in attracting revenue increments in a more active market. They may actually gain through lower rates in the long term. In any case, the umbrella protection, provided at the expense of the shippers of competitive traffic, is uneconomic and not a matter of entitlement.

The effect on the competing carriers would depend on their economic capabilities in a fair market test. Both the railroads and their competitors have had cost-justified rate reductions turned down or restricted by the Commission's consideration of the effect of the reduction on the traffic and revenues of the other. But the motor and water carriers display an unseemly lack of confidence in their ability to prosper in a freer market.<sup>30</sup> This fear apparently stems from the belief that rail rates on competitive traffic would gravitate to the level of out-of-pocket costs and that such a cost reference is uneconomic. Both aspects of this view are subject to substantial question.

<sup>28</sup> Interstate Commerce Commission, Bureau of Accounts and Cost Finding, *Southern Motor Carrier Cost Study—Year 1950*, Statement No. 2-53, April, 1953, pp. 269-81.

<sup>29</sup> See *Report of the Presidential Advisory Committee on Transport Policy and Organization*. Legislation to implement the Committee's proposals has been introduced in both Houses of Congress. The Senate version is S.R. 1920 and the House bill is H.R. 6141, both in the 84th Congress, 1st Session.

<sup>30</sup> Despite the fact that the water carriers are clearly subsidized and there is substantial question whether the motor carriers aren't as well.

Ruling out competitive rates depressed to a point where they are unprofitable to the carrier quoting them, there is little reason to be suspicious of rates made with reference to out-of-pocket costs. Out-of-pocket cost pricing refers to charges less than "fully-distributed costs," a measure derived from a *pro rata* distribution of the overhead burden to all services. Although fully distributed costs are a tempting nicety and are useful for measuring relative rate levels, there is no economic basis in the railroad industry for prices built on an equal assignment of the burden in the face of excess capacity and variations in demand elasticity. Acceptance of fully-distributed costs as some sort of norm and the rejection of railroad rates below this level are completely unwarranted in economic thought.

The only legitimate fear that the railroad competitors might have is predatory pricing through the publication of unprofitable rates designed specifically to force them out of business with a view to subsequent monopoly exploitation. But it is doubtful if anyone contemplates a return to the unrestricted price warfare suggested in the motor carriers' slogan referring to the "Fight for Survival." Regulation can and should be devoted to assuring that competition is maintained as an effective control device, which would preclude such predatory pricing. In putting a cost floor under rates, regulation would perform the useful function of instilling adequate consideration of long-run costs. Even in the absence of this employment of regulation, it does not appear that such a campaign would represent a rational program of railroad action. The fruits are apt to be highly illusory for a variety of reasons. Public policy is dedicated to the prevention of monopoly profits, so presumably they would not be left free to enjoy their "ill-gotten gains." Furthermore, the relative ease of entry into the motor-carrier industry (in the absence of regulatory restrictions) would tend to make such a policy a never-ending battle.

But regardless of the outcome, it must be remembered that there is nothing sacred about the present level of investment or of any specific investment in any type of transport plant and equipment. If greater market freedom results in the diversion of traffic from non-rail carriers, this may occasion economic loss to individuals but there is no public responsibility to them as such—only to an optimum transport system.<sup>31</sup> Clearly such carriers have no entitlement to any traffic they may have attracted through past railroad lack of insight and of realistic pricing policies and by poorly conceived and unduly restrictive regulation. Transcontinental hauls of truck-load shipments probably fall in this category. This proposition has been recognized by at least one spokesman for the trucking industry who, aside from any changes in regulation, foresees the loss of much long-haul volume movement and states that the future of the industry lies in the short hauls of smaller shipments.<sup>32</sup>

Even if rates below "full cost" are accepted in principle, there is no basis for assuming that competitive rates will necessarily press against the out-of-pocket

<sup>31</sup> This is not to deny possible occasions when departures may constitute sound public policy. But they should be explicitly justified and the costs and benefits measured.

<sup>32</sup> J. H. Fles, Executive Vice President, Associated Truck Lines, "Terminal Operations—The Key to Success," *Proceedings of the Sixth Annual Meeting of the Operations Council, American Trucking Associations*, pp. 179-80.

cost limit. Important in this connection is the relationship between the rates on competitive and non-competitive traffic. The extent of reductions on the former is limited by the contribution to the overhead burden which can be raised from the rail-bound traffic. This contribution is sharply limited by economic circumstances affecting the demand elasticity for the movement of such commodities. If, as is generally assumed, rail-bound traffic consists primarily of the longer hauls of low-grade bulk commodities, the elastic demand of these services precludes a substantial reordering of the overhead burden. Demand elasticity is just as rigorous a market fact in the absence of active agency competition as when such competition is important. Further limits are imposed by maximum rate regulation if that control is maintained, as contemplated in pending legislation.

A cursory examination of present rate patterns suggests the substantial readjustment which would be required to bring motor-competitive rail charges to a level approaching out-of-pocket costs. According to cost data developed by the Commission's staff, revenues from Products of Mines are, on the average, 75 per cent of fully distributed costs. On the other hand, revenues from Manufactures and Miscellaneous, where motor competition is keenest, are 132 per cent of fully distributed costs.<sup>33</sup> Of the 146 commodity groupings in the manufactures class, only 13 recorded revenue contributions below "full costs."<sup>34</sup> These rate patterns have shown little sign of deterioration. Between 1947 and 1952, in fact, the relative burden contribution of the manufactures group actually increased.<sup>35</sup> Similarly, between 1947 and 1953 the rate advances for the manufactures class exceeded the all-commodity average and far outstripped the increase for Products of Mines (embracing largely "rail-bound" commodities). The comparative increases were 44 per cent for manufactures and 31 per cent for mineral products.<sup>36</sup>

Although these relative rate patterns significantly reflect the previously described restrictions on competitive rate reductions, price competition has been somewhat dynamic in recent years. And in a period of generally rising rates, competitive pressures have a special opportunity to assert themselves through the uneven application of rate advances. Despite these considerations, market forces have not dictated any substantial reordering of rate relationships between the broad commodity classes which have been examined.<sup>37</sup> The changes noted tend to confirm the proposition that other factors than carrier competition intervene to limit wholesale shifts of the railroad overhead burden

<sup>33</sup> I.C.C., Bureau of Transport Economics and Statistics, *Distribution of the Rail Revenue Contribution by Commodity Groups*, Statement 1-55, March, 1955, pp. 26-28.

<sup>34</sup> This excludes such items as waste materials and returned empty containers where relatively low rates have other bases than competition.

<sup>35</sup> *Ibid.*, Statement No. 2-49, April, 1949.

<sup>36</sup> I.C.C., Bureau of Transport Economics and Statistics, *Indexes of Average Freight Rates*, *op. cit.*, pp. 11-12.

<sup>37</sup> The data cited are not, of course, conclusive, but suggest a line of definitive research. There is a wide variety of commodities in each group with greatly different competitive pressures. But the figures are suggestive.



away from truck-competitive traffic. It is questionable whether more active price competition would significantly reverse present relationships.

Even with a closer adjustment of rail rates on competitive traffic to out-of-pocket costs, it is hardly likely that the survival of the non-rail competitors would be seriously jeopardized. It is very probable that the resulting rail rates would be higher than motor-carrier costs and rates over substantial ranges of traffic. It must also be recognized that service as well as price dictates market decisions. In many situations, relative rates are a minor consideration where a shipper requires the superior flexibility, despatch, or some other quality of truck movement. This would be true for shorter hauls of less-than-truckload quantities of high-valued articles—the clear domain of motor transportation. In other words, the market dictates a range of traffic that, because of cost or service considerations, is “highway bound” to the same degree that some traffic is rail bound. The contrary view would be premised on the untenable proposition that there are no services for which motor transportation has a true “inherent” advantage. This captive market is augmented by the fact that many recently acquired industry sites are not served by rail facilities. It is worth noting also that more realistic rate policies will go far in attracting to the for-hire carriers a large volume of tonnage that has been forced to move in private carriage.

#### CONCLUSIONS

While not explored definitively, the foregoing considerations strongly suggest the feasibility of permitting the market more voice in supplying answers to difficult questions of transport control. Particularly if subsidy were eliminated, greater price competition would provide authoritative traffic allocations. It appears that no legitimate interests would be impaired. And it would be possible to face reality with respect to the railroad plant—completing the demise of “fair return” as a regulatory tool except for monopoly control. The earnings accorded the railroads by the market would establish investment value, as in the economy generally. This economic value is the relevant matter; the accounting valuations should be relegated to less crucial employments.

Greater market control in lieu of authoritative manipulation would facilitate and should be supplemented by public policy designed to foster rather than discourage rationalization of the railroad industry. With the market sitting in judgment, greater attention would be given to such rationalization devices as the abandonment of economically obsolete facilities and services and the consolidation of duplicate facilities. It would further promote a more realistic view of reorganization as a device to bring accounting valuations into accord with economic value. If the market will have its say, we must encourage it to speak clearly and firmly. The only real alternative appears to be to silence it completely with the muffler of authoritative control.

## STATIC MODELS OF AVERAGE-COST PRICING<sup>1</sup>

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The beginning of the last decade witnessed, primarily in England, the development of a new approach to the theory of imperfect competition. This contribution is embodied in the principle of average- or full-cost pricing, introduced by Hitch and Hall.<sup>2</sup> Writers of this group suggest that the conventional assumption of short-run profit maximization is inadequate in the present social and industrial milieu. Or, to quote one leading advocate, "... the security motive must be given the same pride of place as has been occupied by the profit maximization principle for such a long time."

Since the assumption of profit maximization is abandoned or modified, it is necessary to substitute some pricing criterion for the customary equation of short-run marginal revenue with short-run marginal cost. The entrepreneurial policy generally suggested is equalization of price with average cost.<sup>4</sup> Many institutional and market factors are advanced to justify this policy; but most of them are attributable either to intercommodity substitution or to the threat of potential competition.

There now exists an extensive literature concerning substitutability, elasticity, and market classification.<sup>5</sup> It is the purpose of this paper to consider markets in which the importance of substitution is negligible as compared to the threat of potential competition. More specifically, we investigate the conditions under which average-cost pricing is likely to prevail in an oligopolistic market. In compliance with the criticism noted, equality of short-run marginal revenue and short-run marginal cost is rejected as the pricing criterion. However, the principle of profit maximization is retained in a somewhat attenuated form. Full allowance is made for market interdependence, i.e., for the functional relationship between the parameters of action<sup>6</sup> of the various entrepreneurs.

<sup>1</sup> The study resulting in this paper was made under a fellowship granted by the Earhart Foundation. However, the conclusions, opinions, and other statements in this paper are those of the writer and not necessarily those of the Earhart Foundation. The writer wishes to express his appreciation to Professor R. W. Pfouts, University of North Carolina, for many helpful suggestions during the preparation of the manuscript.

<sup>2</sup> R. L. Hall and C. J. Hitch, "Price Theory and Business Behavior," *Oxford Economic Papers*, No. 2, May, 1939, pp. 12-45.

<sup>3</sup> K. W. Rothchild, "Price Theory and Oligopoly," *Economic Journal*, LVII (1947), p. 309.

<sup>4</sup> For a definition of average cost that satisfies most proponents of this doctrine, see *ibid.*, p. 311.

<sup>5</sup> For a summary and bibliography, see R. L. Bishop, "Elasticities, Cross-Elasticities, and Market Relationships," *American Economic Review*, XLII (1952), pp. 779-803.

<sup>6</sup> A parameter of action is an economic magnitude that can be fixed by the entrepreneur. If there is more than one parameter of action, they must be independent. For example, either price or quantity, but not both, can be a parameter of action for an entrepreneur.

At any particular moment in time, these functional relationships enter the maximization process of a given entrepreneur in the form of *anticipated* competitive reaction. The expectations<sup>7</sup> of a given entrepreneur relative to his competitors' reactions are introduced into the analysis by employing coefficients of conjectural variation (discussed below). Another factor of signal importance in circular markets is the entrepreneur's attitude toward maintenance of position, especially when this conflicts with immediate profit realization. Attention is directed to this element by studying the first partial derivatives of the entrepreneur's preference function.

To facilitate discussion of entrepreneurial attitudes toward maintenance of position, we employ the picturesque terminology suggested by Professor Hicks.<sup>8</sup> The entrepreneur who is primarily concerned with seizing a quick profit, regardless of the effect upon his future market position, is termed a Snatcher. On the other hand, we call the one who is mainly interested in preservation of market position, regardless of the effect upon immediate profit, a Sticker. These terms are defined more precisely in a subsequent portion of this paper.

To treat the problem of average-cost pricing in relation to potential competition, two models are used. The first model is analogous to the one customarily used in analyzing consumer behavior. This model is based on the assumption that potential entrants respond to the profit position of existing entrepreneurs. The second, a price-deterrent model, rests upon the contention of Bain<sup>9</sup> and others that potential competitors respond to price rather than profit.

It is then shown that, within the context assumed, average-cost pricing is a rare phenomenon, attributable to a very special set of conditions (which are different for the two models). In the general case, however, equilibrium average-cost pricing necessitates the presence of a perfectly competitive market. Before entering the discussion proper, two brief digressions are necessary in order to establish a part of the analytical framework.

#### THE CONCEPT OF CONJECTURAL VARIATION

The concept of conjectural variation was introduced into economic literature by Professor Ragnar Frisch in his celebrated paper "Monopoly—Polypoly—The Concept of Force in the Economy."<sup>10</sup> Frisch defines three types of competitive reaction: autonomous, conjectural, and superior. The first describes the Cournot duopoly case, while the last corresponds to market leadership.

The second category treats the problem with which we are immediately con-

Cf. Ragnar Frisch, "Monopoly—Polypoly—The Concept of Force in the Economy," *International Economic Papers*, No. 1 (London: Macmillan, 1951), p. 29.

<sup>7</sup> For the purposes of this paper, the entrepreneur is assumed to hold *single-valued* expectations. The words "expected" and "expectation" never refer to the expected value of a probability distribution.

<sup>8</sup> J. R. Hicks, "The Process of Imperfect Competition," *Oxford Economic Papers*, N. S. VI (1954), p. 45.

<sup>9</sup> J. S. Bain, "A Note on Pricing in Monopoly and Oligopoly," *American Economic Review*, XXXIX (1949), pp. 448-64.

<sup>10</sup> Ragnar Frisch, *op. cit.*, pp. 30-2.

cerned. Each duopolist or oligopolist considers that his competitors, both present and potential, adjust their parameters of action in response to a change in his own. For example, if one assumes that price is the only parameter of action, duopolist 1 believes that  $p_2 = p_2(p_1)$ , where  $p$  is price and subscripts denote the duopolist.

If we assume definite expectations on the part of duopolist 1, i.e., if we assume that duopolist 1 expects a particular form of the function  $p_2 = p_2(p_1)$ , we may define the coefficient of conjectural variation,

$$v_{21} = \frac{\partial p_2}{\partial p_1} \frac{p_1}{p_2}, \quad (1)$$

which expresses the relative change in the parameter of action  $p_2$  that duopolist 1 believes he will induce by changing his parameter  $p_1$ .

More generally, if there are  $n$  parameters of action  $p_\alpha$  ( $\alpha = 1, 2, \dots, n$ ) and  $m$  oligopolists, we may define the coefficient of conjectural variation for a change in the  $\beta$ th parameter of the  $j$ th entrepreneur with respect to a change in the  $\alpha$ th parameter of the  $i$ th entrepreneur:

$$v_{ji}^{p_\beta p_\alpha} = \frac{\partial p_{\beta j}}{\partial p_{\alpha i}} \frac{p_{\alpha i}}{p_{\beta j}}. \quad (2)$$

#### COMPETITIVE REACTION

One of the most important aspects of entrepreneurial behavior is the activity of one producer *vis-à-vis* his competitor(s). Indeed, this is true not only for the economic theorist as such, but for each producer in interdependent markets, since the entrepreneur's anticipations of competitive reaction are an integral part of his real-world production plan.

The reactions of competitors to variations in the parameters of action of a given entrepreneur are difficult to discern in the market place. Furthermore, realized market reactions are important primarily because they confirm or modify the entrepreneur's expectations of future reactions. For example, in a sequence model, one conceives the market reactions of one or more preceding periods as forces affecting the expected reactions of the period in question.

For this reason, in our static model, we limit consideration to reactions anticipated by a given producer and to the role of these anticipations in his entrepreneurial preference function and his subjective demand function. Since we consider only anticipations, it is possible to include the *expected* reactions of potential, as well as existing, rivals in the analysis. Therefore, we wish, on the one hand, to give a specific functional form to expected competitive reactions and, on the other, to design this function so that it is consistent with a static model.

We can define *realized* competitive reaction as all the changes (including zero change) in the parameters of action of competitors that result from a specific group of changes in the parameters of the given entrepreneur. Then *expected* competitive reaction is the group of parameter changes that the entrepreneur believes he will initiate by specified changes in his own parameters of action.

But in order to associate expected changes in competitors' parameters with changes in his own, the entrepreneur must also expect certain values for each of his rivals' parameters for specified values of his own.

We now assume that for any group of changes in his own parameters, the producer can assign an index value to the expected changes in his competitors' parameters. This index could assume various forms, depending upon the structural characteristics of the market which are of greatest importance to the entrepreneur in question. For example, the index of the  $i$ th entrepreneur could assume the form of a Laspeyre weighted index:

$$\Psi_i = \frac{\sum_j \sum_{\gamma} p_{\gamma 1}^j s_0^j}{\sum_j \sum_{\gamma} p_{\gamma 0}^j s_0^j}, \quad (3)$$

where 1 and 0 refer to the given and base periods respectively,  $s^j$  is the  $i$ th entrepreneur's evaluation of (say) the market influence of the  $j$ th entrepreneur, and the double summation extends over all parameters  $\gamma$  of the rival entrepreneurs.

But since in oligopolistic markets, the  $i$ th entrepreneur believes that for all  $j$  and all  $\gamma$ ,  $p_{\gamma}^j$  is a function of his own parameters, we can say that

$$\psi_i = f(p_i^1, p_i^2, \dots, p_i^n). \quad (4)$$

In subsequent sections, a simplified form of equation (4) is used. Specifically, we use a linear function. Generally, however, until the arguments are specified, one cannot even make an *a priori* statement pertaining to any properties of the function.

#### A UTILITY MODEL

Let us assume an entrepreneur who regards the level of competitive reaction as a function of his own level of profit. This is tantamount to assuming that profit is the only parameter of action of the duopolist in question. Of course, in the strict sense of Professor Frisch's definition, profit cannot be regarded as a parameter of action. However, since the threat of entry or potential competition affects the pricing and production plans of an entrepreneur according to his subjective evaluation of this threat, the evaluation can take the form of anticipated parameter changes by potential entrants. Thus, in order to test the proposition that the threat of potential competition modifies pricing policy, we consider profit a parameter of action.

Further, we suppose that this entrepreneur wishes to stimulate the minimum reaction consistent with what he believes a satisfactory position for his firm. More specifically, we assume that there exists for the entrepreneur in question a preference function for a combination of profit ( $\pi$ ) and competitive reaction ( $\psi$ ):

$$\phi = \phi(\pi, \psi), \quad (5)$$

where  $\phi_{\pi} > 0$  and  $\phi_{\psi} < 0$ , subscripts denoting partial differentiation.

Two further assumptions are made: (a) the objective of the entrepreneur is to



maximize this function, and (b) that there is a relation between competitive reaction and profit of the form displayed in equation (4). For simplicity, suppose that this relation is linear and is given by

$$\psi = \alpha\pi + \beta. \quad (6)$$

To satisfy assumptions (a) and (b) introduce a Lagrange multiplier  $\lambda$  and write the first-order or equilibrium conditions:

$$\phi_\pi = \alpha\lambda, \quad (7)$$

$$\phi_\psi = -\lambda. \quad (8)$$

By eliminating  $\lambda$  between (7) and (8), the equilibrium condition is:

$$\frac{\phi_\pi}{\alpha} = -\phi_\psi. \quad (9)$$

Equation (9) and the constraint equation (6) give two equations to solve for the two unknowns,  $\pi$  and  $\psi$ .

The second-order or stability conditions and the expressions corresponding to the income and substitution effects may be stated in the familiar manner. However, in the present model, little is gained from this procedure. The second-order conditions confirm that the entrepreneurial indifference curves must slope upward to the right and be concave from below (see Figure 1). Moreover, since one presumes that in all cases  $\phi_\pi > 0$ ,  $\phi_\psi < 0$ , there is nothing in this model analogous to inferior goods in Professor Hicks' analysis of consumer behavior. Therefore, the conditions  $\partial\pi/\partial\alpha < 0$ ,  $\partial\pi/\partial\beta < 0$ ,  $\partial\psi/\partial\alpha > 0$ , and  $\partial\psi/\partial\beta > 0$  are readily ascertainable from the figure. It may be added that as an index of

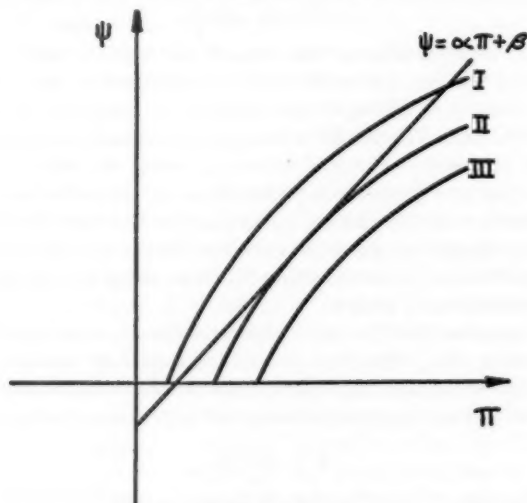


FIG. 1

preference,  $I < II < III$ . That is, the index increases as one moves in a south-easterly direction, the most preferred position corresponding to any given level of profit lying of the abscissa.

Consider now equations (7) and (8).  $\phi_\pi$  and  $\phi_\psi$  are, respectively, the marginal utility of profit and the marginal disutility of incurring competitive reaction. In consideration of its role in (6),  $\alpha$  is denoted the reaction multiplier. Writing (7) as  $\phi_\pi/\alpha = \lambda$ , we identify the Lagrange multiplier  $\lambda$  as the marginal utility of perpetuating profit. Thus from (9), the equilibrium condition may be expressed as follows: in absolute value, the marginal utility of perpetuating profit must equal the marginal disutility of incurring competitive reaction. Or alternatively, the marginal utility of profit must equal the product of the marginal disutility of incurring competitive reaction and the reaction multiplier.

The same result may be viewed somewhat differently, and in a manner which bears more precisely upon the problem at hand. Define the coefficient of conjectural variation as

$$\nu = \frac{d\psi}{d\pi} \frac{\pi}{\psi} > 0. \quad (10)$$

By using (10) we may write a new equation for  $\alpha$ , namely

$$\alpha = \frac{\psi}{\pi} \nu. \quad (11)$$

Substituting (11) into (9), we obtain

$$\pi\phi_\pi = -\nu\psi\phi_\psi. \quad (12)$$

Equation (12) restates the equilibrium condition in the following manner: in absolute value, profit multiplied by the marginal utility of profit must equal the product of the coefficient of conjectural variation, the level of competitive reaction, and the marginal disutility of incurring competitive reaction.

In the equilibrium condition as formulated in (12), we readily identify the two crucial factors in average-cost pricing, expectations and the psychological preference for position in the market group. First, it is noted that the entrepreneur is a Sticker or a Snatcher according as  $|\phi_\psi|$  is very large or very small. That is, the greater the absolute value of  $\phi_\psi$ , the greater the increment in profit necessary to induce the entrepreneur to tolerate a given increase in the level of competitive reaction.

Secondly, the entrepreneur's expectations are embodied in the coefficient of conjectural variation. Three states of expectations are frequently distinguished. First, an entrepreneur may hold simple expectations, meaning that he expects identical market conditions in both the short and long runs. Secondly, if an entrepreneur entertains polypolistic expectations, he anticipates entry by other firms, irrespective of his short-run policies. Finally, if an entrepreneur believes that the levels of his own parameters of action influence competitive reaction, we say that he holds oligopolistic expectations.

As an example, the particular instance of simple expectations is given by

$\nu = 0$ . Equation (12) then reduces to

$$\pi\phi_{\pi} = 0. \quad (13)$$

Two cases of (13) are discernible. If  $\pi \neq 0$ , then  $\phi_{\pi} = 0$  is the criterion appropriate to pure monopoly. On the other hand,  $\pi$  and  $\phi_{\pi}$  may both equal zero. Such is the case in perfect competition.<sup>11</sup>

In the present model, one cannot discriminate as between simple and polypolistic expectations. By definition, polypolistic expectations result in  $d\psi/d\pi = 0$ , so that  $\nu = 0$ , precisely the case discussed above. Accordingly, we say that polypolistic expectations dictate the same entrepreneurial policy as simple expectations. In both cases, this policy is short-run equilibration of marginal revenue and marginal cost, rather than average-cost pricing.

If the entrepreneur holds oligopolistic expectations,  $\nu > 0$ . To treat a special case first, if  $\nu = 1$ , (12) becomes

$$\frac{\pi}{\psi} = - \frac{\phi_{\psi}}{\phi_{\pi}}. \quad (14)$$

There is obviously an isomorphism between (14) and the conventional results of the analysis of consumer preference, which is attributable to the unitary elasticity of conjectural variation. Equilibrium is reached when the ratio of profit to competitive reaction (corresponding to the price ratio in the theory of consumer behavior) equals the marginal rate of substitution of profit for competitive reaction. Two additional situations are possible.

1. If  $0 < \nu < 1$ , the entrepreneur expects that competitors react less than proportionately to changes in his profit; that is, his conjectural variation is inelastic. Accordingly, the entrepreneur regards profit limitation as an effective weapon for deterring competition. In this case, equality of short-run marginal revenue and short-run marginal cost is not likely. However, this alone does not imply average-cost pricing.

The previous analogy with the theory of consumer behavior is applicable to the present case. The equilibrium condition of equation (14) is modified by introducing a non-unitary weight ( $\nu < 1$ ). The ratio of profit to competitive reaction is less than the marginal rate of substitution, implying that the level of profit is lower than in the case of unitary elasticity. Such results do not appear in the analysis of consumer behavior, for one assumes that the individual consumer regards price as fixed irrespective of his purchases. However, similar results are obtained if one supposes that the consumer receives a secret price discount.

2. If  $\nu > 1$ , the entrepreneur anticipates greater than proportional reaction by existing competitors; that is, conjectural variation is elastic. Hence a program designed to restrict potential competitors through profit limitation is likely to incur retaliation by existing competitors which makes restriction of entry prohibitively expensive. In this case, although the entrepreneur holds oligopolistic expectations, he acts as if his expectations are polypolistic. The previous analogy

<sup>11</sup> The other conceivable alternative,  $\pi = 0$  and  $\phi_{\pi} \neq 0$ , is not an equilibrium condition and, hence, is excluded by assumption.

applies to this case if one assumes that the consumer is required to pay a premium.

We now consider the implications of this model regarding the conditions necessary for average-cost pricing. Profit can be written as  $(p - \bar{c})q$ , where  $p$  and  $q$  are price and quantity and  $\bar{c}$  is average cost. Substituting this expression into (12) and solving for  $(p - \bar{c})$ , we obtain

$$p - \bar{c} = -S_{\pi\psi} \frac{\nu\psi}{q}, \quad (15)$$

where  $S_{\pi\psi}$  is the marginal rate of substitution of profit for competitive reaction. In order for price to equal average cost in equilibrium, either of two conditions must be satisfied.

1.  $p = \bar{c}$  if  $\nu\psi/q = 0$ . The problem is irrelevant if  $q = 0$ , hence either  $\nu = 0$ ,  $\psi = 0$ , or both. The substance of these two situations has been discussed previously.  $\nu = 0$  implies simple expectations, and hence entrepreneurial behavior identical to that in pure markets. Similarly,  $\psi = 0$ , i.e. absence of competitive reaction, also implies either perfect competition or perfect monopoly. Consequently, these two situations are dismissed, since they are not descriptive of market organizations with which we are presently concerned.

2.  $p = \bar{c}$  if  $-S_{\pi\psi} = 0$ , i.e. if the marginal rate of substitution is zero. But

$$-S_{\pi\psi} = -\frac{\phi_\psi}{\phi_\pi} = \frac{d\pi}{d\psi} \quad (16)$$

by the rule of implicit functions. But if  $d\pi/d\psi = 0$ , then  $d\psi/d\pi$  is undefined and hence

$$\nu = \frac{d\psi}{d\pi} \pi$$

is an indeterminate form which is not reducible by L'Hospital's Rule.

On the basis of this model, we conclude that average-cost pricing obtains only under special conditions. Indeed, only one determinant case has been found in which departure from the pricing policy of conventional theory appears likely: inelasticity of conjectural variation. But if the entrepreneur is a Perfect Sticker, if his conjectural variation is inelastic, and if he regards the absence of pure profit as a necessary and sufficient deterrent to potential competition, then an average-cost pricing policy is feasible. However, for several reasons, such a particular conjuncture of preferences and anticipations seems improbable.

In the first place, there is evidence in the market today to indicate that entrepreneurs are willing to assume risk in order to achieve pure profit. To the extent that this is true, Perfect Stickers are rare. Secondly, both price wars and rigid prices indicate that conjectural variations are not uniformly inelastic. Finally, it is unrealistic to assume that absence of pure profit is both necessary and sufficient to deter entry. Frequently, existing firms enjoy cost advantages so that price may exceed average cost and yet deter potential competition. Thus, the condition is not necessary. Furthermore, it is not sufficient, since entrance is

sometimes attributable to a cost advantage secured by the entrant. Economists traditionally cite innovation in this respect. To be sure, average-cost pricing is a fruitless policy in this case.

Therefore, we state Proposition I on equilibrium average-cost pricing:

If the entrepreneurial policy of average-cost pricing is attributed to the desire to thwart potential competition, then that policy is appropriate providing all of the following conditions are met: the entrepreneur (a) is a Perfect Sticker, (b) has inelastic conjectural variation, and (c) regards absence of pure profit as a necessary and sufficient deterrent to entry. Under any other circumstances, average-cost pricing appears unlikely.

It seems that Proposition I is an understatement, for Case 1 above,  $p = \bar{c}$  if  $\nu = 0$  or  $\psi = 0$ , implies that the entrepreneur must have *absolutely* inelastic conjectural variations. That is, perfect competition must prevail in order to insure average-cost pricing in equilibrium.

#### A PRICE-DETERRENT MODEL

In the previous model, we made the conventional assumption that competitors react to profit. Many writers, however, contend that price is the appropriate signal for competitors. Therefore, we replace our former assumption by the assumption that competitors react to price and ask if the previous conclusion is materially altered. In order to answer this question, consider a market composed of duopolists 1 and 2 (denoted by subscripts to variables). Let us focus attention upon duopolist 1.

It is convenient at the outset to detail the assumptions:

a. Duopolist 1 desires to maximize profit, but he is aware that his competitors, both potential and present, react to changes in his price and that their reactions affect his profit via changes in his demand function. Furthermore, he holds single-valued expectations of competitive reaction.

b. The duopolist in question purchases productive services in a perfectly competitive market. Hence his cost is a function of quantity produced, and of that only.

c. Price is the only parameter of action. This assumption is subsequently relaxed.

d. The model is not relevant if price is less than average cost. That is, the entrepreneur does not remain in business permanently unless he covers cost.

From the standpoint of duopolist 1, assumptions (a) - (c) establish certain relationships among the variables with which he is concerned. Denoting profit, price, quantity, and cost by  $\pi$ ,  $p$ ,  $q$ , and  $c$  respectively, these relationships are:<sup>12</sup>

$$p_2 = p_2(p_1), \quad (17)$$

$$q_1 = q_1(p_1, p_2), \quad (18)$$

$$c_1 = c_1(q_1), \quad (19)$$

$$\pi_1 = p_1 q_1(p_1, p_2) - c_1(q_1). \quad (20)$$

<sup>12</sup> From (17), equation (18) may be written as a function of  $p_1$  only. However, it is necessary to retain the dependent variable  $p_2$  explicitly in order to illustrate the essential role of expectations.



Duopolist 1 adjusts price, his parameter of action, in order to attain maximum profit. Hence the first-order condition for profit maximization is

$$\frac{d\pi_1}{dp_1} = q_1 + p_1 \left( \frac{\partial q_1}{\partial p_1} + \frac{\partial q_1}{\partial p_2} \frac{dp_2}{dp_1} \right) - \frac{dc_1}{dq_1} \left( \frac{\partial q_1}{\partial p_1} + \frac{\partial q_1}{\partial p_2} \frac{dp_2}{dp_1} \right) = 0. \quad (21)$$

For stability, of course,  $d^2\pi_1/dp_1^2 < 0$ .

In its present form, equation (21) only states that in equilibrium, subjective marginal revenue, adjusted for the rival's reaction, must equal marginal cost, similarly adjusted. On the other hand, we are primarily concerned with the manner in which expected reaction influences the equilibrium position attained and the equilibrium relationship of price and average cost. The analysis is facilitated by introducing several coefficients of elasticity:

a. price elasticity of demand:

$$\eta_{ij} = \frac{\partial q_i}{\partial p_j} \frac{p_j}{q_i}; \quad (22)$$

b. elasticity of cost:

$$k = \frac{dc_1}{dq_1} \frac{q_1}{c_1}; \quad (23)$$

c. conjectural variation:

$$\nu_{ji} = \frac{\partial p_j}{\partial p_i} \frac{p_i}{p_j}. \quad (24)$$

Substituting (22) - (24) into (21) and rearranging terms, the equilibrium condition can be written:

$$p_1(1 + \eta_{11} + \eta_{12}\nu_{21}) = \frac{c_1}{q_1} k(\eta_{11} + \eta_{12}\nu_{21}). \quad (25)$$

But  $c_1/q_1$  is average cost; accordingly, it is denoted by  $\bar{c}_1$ . Then solving (25) for  $p_1$  furnishes the equilibrium relation between price and average cost, namely

$$p_1 = \bar{c}_1 \frac{k(\eta_{11} + \eta_{12}\nu_{21})}{(1 + \eta_{11} + \eta_{12}\nu_{21})}. \quad (26)$$

From (26), it is seen that price equals average cost providing

$$\frac{k(\eta_{11} + \eta_{12}\nu_{21})}{1 + \eta_{11} + \eta_{12}\nu_{21}} = 1. \quad (27)$$

By factoring and rearranging terms, (27) may be written

$$k - 1 = \frac{1}{\eta_{11} + \eta_{12}\nu_{21}} = \frac{1}{\eta}, \quad (28)$$

where  $\eta$  is the total elasticity of the entrepreneur's subjective demand function.

Consider now the expression for the elasticity of average cost:

$$\frac{d\bar{c}_1}{d\bar{c}_1} \frac{q_1}{c_1} = \frac{q_1 \frac{dc_1}{dq_1} - c_1}{q_1^2} \frac{q_1}{c_1} = \frac{1}{c_1} \left( \frac{dc_1}{dq_1} - \bar{c}_1 \right) = k - 1. \quad (29)$$

Hence the expression  $(k - 1)$  in equation (28) is the elasticity of average cost. We now invoke the well-known theorem that production occurs only in the elastic region of the demand function. Accordingly,  $\eta < -1$ , which implies

$$-1 < k - 1 < 0, \quad (30)$$

or solving for  $k$ ,

$$0 < k < 1. \quad (31)$$

Inequalities (31) state that, if average-cost pricing prevails in equilibrium, production occurs at a point of increasing returns, i.e., the elasticity of average cost is negative.

By a simple extension of the previous model, it can be shown that the results hold irrespective of the number of competitors. Therefore, we state Proposition II:

In a duopoly or oligopoly market in which price is the only parameter of action, average-cost pricing prevails in equilibrium if the elasticity of average cost equals the reciprocal of the total elasticity of (subjective) demand. In all such cases, the firm produces in an area of increasing returns.

The introduction of additional parameters substantially modifies Proposition II. In order to generalize the previous model, we employ the same technique of analysis, expanded to include advertising expenditure ( $a$ ) as a second parameter of action. We retain assumptions (a), (b), and (d), which give the following relationships among the variables of the problem:

$$p_2 = p_2(p_1, a_1), \quad (32)$$

$$a_2 = a_2(p_1, a_1), \quad (33)$$

$$q_1 = q_1(p_1, p_2, a_1, a_2). \quad (34)$$

We also use the coefficient of advertising elasticity of demand:

$$e_{ij} = \frac{\partial q_i}{\partial a_j} \frac{a_j}{q_i}. \quad (35)$$

Since both price and advertising expenditure are parameters of action, we have two equilibrium conditions:

$$p_1(1 + \eta_{11} + \eta_{12}p_{21}^{pp} + e_{12}p_{21}^{ap}) = \bar{c}_1 k(\eta_{11} + \eta_{12}p_{21}^{pp} + e_{12}p_{21}^{ap}), \quad (36)$$

$$p_1(\eta_{12}p_{21}^{pa} + e_{11} + e_{12}p_{21}^{aa}) = \bar{c}_1 k(\eta_{12}p_{21}^{pa} + e_{11} + e_{12}p_{21}^{aa}). \quad (37)$$

From equation (36) we obtain, as in the previous model,

$$p_1 = \bar{c}_1 \quad \text{if} \quad k - 1 = \frac{1}{\eta}. \quad (38)$$

But equation (37) imposes an additional condition upon the equilibrium solution, namely

$$p_1 = \bar{c}_1, \quad \text{if} \quad k = 1. \quad (39)$$

From (38) and (39),

$$\frac{1}{\eta} = 0, \quad (40)$$

which implies that  $\eta \rightarrow \infty$ , the condition of perfect competition. This result contradicts the hypothesis of market interdependence.

The two-parameter model is easily extended to cover as many oligopolists and parameters as desired; the results are invariant under any such extension. Consequently, we state Proposition III:

In duopoly or oligopoly markets in which there are more than one parameter of action (one of which is price), and in which the entrepreneurs concerned regard price as a deterrent to potential competition, entrepreneurs never adopt the policy of average-cost pricing.

Attention is called to the implicit assumption of continuity upon which the proposition is based. Finally, as a corollary to Propositions II and III, we state Proposition IV:

If price is not a parameter of action, average-cost pricing obtains only if the production function of the entrepreneur in question is homogeneous of the first degree.

The proof of Proposition IV is simple. If price is not a parameter of action, the first-order maximum conditions yield as many equations of the general form of equation (37) as there are parameters of action. Each such equation is reducible precisely to equation (39). But if  $k = 1$ ,  $k - 1 = 0$ ; that is, the average cost curve is absolutely inelastic. Or alternatively, the average cost curve is horizontal. But when average cost is constant, marginal cost is constant and equal to average cost. Therefore, since constancy of marginal cost implies first-degree homogeneity of the production function,<sup>13</sup> the proposition is proved.

#### CONCLUSION

In no phase of economic theory are the limitations of static analysis more evident than in studies of duopoly and oligopoly. In this connection, perhaps the most obvious deficiency of the present models lies in neglecting the effect of information upon entrepreneurial expectations. However, the writer believes that static models are sufficient to show the improbability of average-cost pricing, when that policy is attributed to the desire to thwart potential competition.

We have investigated two models of behavior designed to deter potential competitors, a utility model and a price-deterrent model. In the first, we assumed that competitors, present and potential, react to the profit position of the firm in question. In this case, we found, to state the strong conclusion, that equilibrium average-cost pricing prevails only in conjunction with perfect competition. That is, oligopolistic circularity does not lead to average- or full-cost pricing.

In the second model, we assumed that price is the relevant signal for competi-

<sup>13</sup> P. A. Samuelson, *Foundations of Economic Analysis* (Cambridge: Harvard, 1947) p. 85.

tors. In the one parameter case, we found that average-cost pricing prevails if the elasticity of average cost equals the reciprocal of the total elasticity of demand in a region of decreasing cost. If more parameters are introduced into the analysis, average-cost pricing never occurs except under conditions of perfect competition, so long as price is regarded as a parameter of action. If it is not, then average-cost pricing obtains in equilibrium if the firm in question is confronted with a production function which is homogeneous of the first degree.

Therefore, the following conclusion seems justified: average-cost pricing in oligopolistic markets requires particular cost and demand conditions that are not frequently satisfied either by theoretical or by empirically determined functions.

## ALTERNATIVE MEASURES OF LABOR'S SHARE

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One of the most fundamental problems in economics is the distribution of income among the factors of production. As national income is the sum of the factor incomes, it is natural that most empirical studies have used national income as a base. Now that increasing portions of the income earned by the factors are either taxed or not distributed, gross factor shares have decreasing relevance as measures of welfare. As the various factors of production do not benefit either in direct proportion to taxes paid, or immediately from undistributed income, there is a real need for an alternative measure of labor's share which will reflect these items. Labor's share of disposable income is such a measure.

Recently Frane and Klein published their data on the distributive shares of disposable income.<sup>1</sup> While these data were originally developed with the objective of providing better bases for the derivation of separate consumption functions, they also have the effect of opening a new area of distribution analysis. This new measure of labor's share is compared with the more traditional "labor's share of national income" (Chart 1).<sup>2</sup> It is apparent from the comparison that the cyclical and secular pattern of change in labor's share is significantly affected by the particular statistical measure employed. Labor's share of national income,  $L/NI$ , rises considerably more than labor's share of disposable income,  $L/DI$ , during the depression, and considerably less than  $L/DI$  during the decade of the forties. Furthermore,  $L/DI$  exhibits a rather marked upward trend not in evidence in  $L/NI$ . The different behavior of these two series attests to the importance of the various tax and undistributed items.

The new measure has the advantage of permitting an analysis of the effects of the various governmental and business policies. For example, it would be possible to examine the impact of a change in the personal or corporate income tax structure or a change in business' profit retention policies upon the shares of disposable income. Similarly, the effects of changes in contributions for social insurance, transfer payments, etc., could be studied.

Although the basic purpose of this paper is to present, rather than account

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<sup>1</sup> Lenore Frane and L. R. Klein, "The Estimation of Disposable Income by Distributive Shares," *Review of Economics and Statistics*, November 1953, pp. 333-336.

<sup>2</sup> As the source of this chart, and all other charts and tables, is "National Income Supplement to the Survey of Current Business, 1951 Edition," and/or Frane and Klein, *ibid.*, no source will appear on the individual charts and tables. The 1951, rather than the 1954, edition of "The National Income Supplement" was used for purposes of comparability with the data of Frane and Klein.



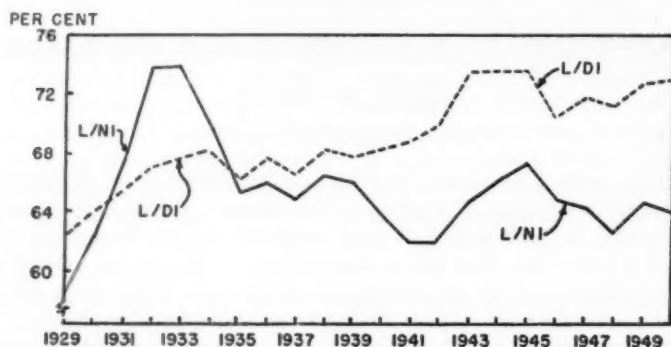


CHART 1. A comparison of labor's share of National Income and labor's share of Disposable Income.

for the behavior of, labor's share of disposable income; the latter objective may be accomplished indirectly. The writer earlier related  $L/Ni$  to the degree of utilization of capacity.<sup>3</sup> If it can now be demonstrated that the adjustment components between  $L/Ni$  and  $L/Di$  are related to the degree of utilization of capacity, then  $L/Di$  is related, albeit loosely and indirectly, to the degree of utilization of capacity.

Briefly, the earlier study found that  $L/Ni$  tends to rise as the economy departs appreciably from "normal capacity" in either direction. That is,  $L/Ni$  rises sharply in the depression of the early thirties and again, but to a lesser degree, in the war years of super-full employment. The increase in  $L/Ni$  during the depression was accompanied by a decrease in productivity (real net national product per man-hour) and an increase in real wages. During the period of war-time expansion, the increase in  $L/Ni$  was accompanied by an increase in real wages and by a rather erratic movement of productivity. The increase in labor's share of the national income during the expansion period was further influenced by a number of war-time phenomena. For example, excess profits taxes probably facilitated the rise in  $L/Ni$  by making wage increases "cheap." The renegotiation provision in government contracts also weakened the inducement to hold down labor costs. Also, there is some evidence that price controls were more rigorously imposed than wage controls, etc. These and several other peculiarly war-time phenomena probably influenced  $L/Ni$  to such an extent as to throw serious doubts on the stability of the relationship between  $L/Ni$  and the degree of utilization of capacity. In other words, it is by no means established that a period of "super-full" employment would be characterized by an abnormally high ratio of  $L/Ni$  in the absence of somewhat special circumstances such as those prevailing in the years 1942-1945.

With the above explanation as a base, the departure of  $L/Di$  from  $L/Ni$  can be explained in terms of the adjustment components between  $Ni$  and  $Di$  (see Table I).

<sup>3</sup> James W. Beck, "Labor's Share and the Degree of Utilization of Capacity," *Southern Economic Journal*, April 1956, pp. 457, 467.

TABLE I

## National Income

Less:	Undistributed corporate profits
	Corporate profits tax liability
	Corporate inventory valuation adjustment
	Contributions for social insurance
	Excess of wage accruals over disbursements
Plus:	Net interest paid by government
	Government transfer payments
	Business transfer payments
Less:	Personal tax and nontax payments
Equals:	Disposable personal income

The extreme variability of the adjustment components in the aggregate is illustrated in the different behavior of national income and disposable income (Chart 2). These components are negative in their combined effect in the depression years of 1931 to 1936, and positive from 1937 to 1950.

These adjustment components affect not only the two measures of total income (national and disposable); they also affect their respective labor and nonlabor portions. Some of the components are allocated to labor income; others are allocated to nonlabor income (see TABLE II). Thus, the numerator and the denominator of  $L/NI$  are affected quite differently by the allocation of the

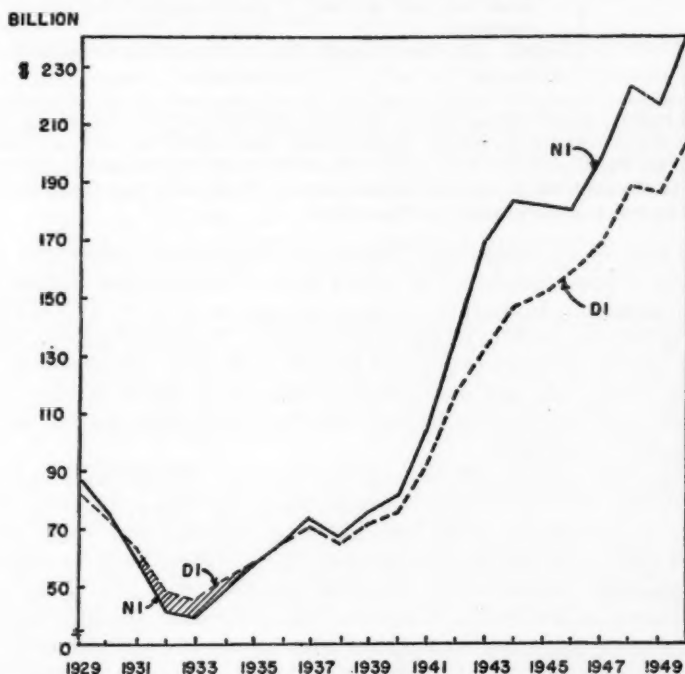


CHART 2. A comparison of National Income and Disposable Income.

TABLE II

Total Income	Labor Income	Nonlabor Income	Labor's Share
National Income (NI)	Compensation of Employees	National Income minus compensation of employees	$L/NI$
Distributed National Income (DNI)	Compensation of Employees Less: Contributions for social insurance and excess of wage accruals over disbursements Equals: Distributed Labor Income	National Income minus compensation of employees Less: Undistributed corporate profits Corporate profits tax liability Corporate inventory valuation adjustment Equals: Distributed Nonlabor Income	$L/DNI$
Personal Income (PI)	Distributed Labor Income Plus: Business transfer payments Government transfer payments* Equals: Personal Labor Income	Distributed Nonlabor Income Plus: Net interest paid by government Equals: Personal Nonlabor Income	$L/PI$
Disposable Personal Income (DI)	Personal Labor Income Less: Labor's share of personal tax and nontax payments Equals: Disposable Labor Income	Personal Nonlabor Income Less: Nonlabor's share of personal tax and nontax payments Equals: Disposable Nonlabor Income	$L/DI$

\* The transfer payments included in the labor component of personal income exclude farm security administration grants, Panama Canal Construction annuities, and the farm part of state and local relief. These items are added to net interest paid by government in order to allocate them to personal nonlabor income. The data for these adjustments were supplied by letter from Professor Lawrence Klein.

various adjustment components. Because the adjustment components are so numerous, a direct comparison of labor's share of national and disposable income is impossible. Instead, the ultimate comparison of  $L/NI$  and  $L/DI$  proceeds via two intermediate stages, labor's share of distributed national income,  $L/DNI$ , and labor's share of personal income,  $L/PI$ . This procedure is not only less cumbersome, but also provides two additional measures of labor's share. The measures of labor's share, together with the linking adjustment components, are recorded in TABLE II.

The allocation of some of the items between labor and nonlabor income requires at least brief explanatory comment. First, the residual definition of nonlabor income includes all of the income of unincorporated enterprises, much of which is really labor income in a functional sense. Although this procedure has ample precedent because of its statistical convenience, it is a "class" rather than a functional distribution of income. That is, the labor portion of income of unincorporated enterprises is considered labor income of a nonlabor or property "class." A consistent "class" type of distribution would require that the interest,

rental, and dividend incomes received by the labor "class" be included in labor income. As data limitations rule out this approach, the result is a hybrid functional-class type of distribution.

A second, and similar, problem arises in the allocation of transfer payments and government interest. With a few exceptions government and business transfer payments are allocated to labor; while government interest is allocated to the nonlabor group. This is, of course, not a functional distribution of income because no function is being performed. It is not a "class" distribution, because many laborers receive government interest payments. It is more a "type of recipient" basis of classifying income. These conceptional problems inevitably arise in shifting definitions of labor's share. Unfortunately, with existing data limitations, these problems can only be recognized—not resolved.

*Comparison of labor's share of national income and labor's share of distributed national income*

Income earned but not received by the productive factors, is deducted from national income in arriving at distributed national income. By this criterion, contributions for social insurance and excess of wage accruals over disbursements are deducted from labor income; undistributed corporate profits, corporate profits tax liability, and inventory valuation adjustment are subtracted from nonlabor income (TABLE II).

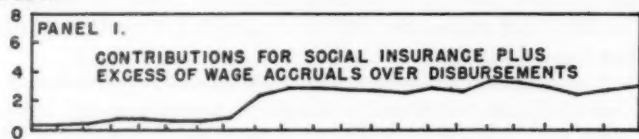
As contributions for social insurance are deducted from labor income, consistency would seem to require that employers' contributions to private pension and welfare funds also be deducted from labor income. However, private pension fund contributions and social security contributions are treated differently in the national income accounts. Social security contributions are excluded from disposable income, while private pension contributions are included in disposable income. Therefore, although private pension contributions could be deducted now from national income in arriving at distributed national income, their ultimate exclusion from disposable income would establish a new definition of that income measure.

While labor's share of distributed national income does have the advantage of excluding the above items which are not actually received by individuals, it does have at least one limitation. It reflects changes in the form as well as the amount of nonlabor income. As a result of taxes and other inducements for retention of earnings by corporations, the claimants of property income have acquiesced in, or encouraged, the policy of retaining large proportions of corporate profits. Therefore, it may not be appropriate to exclude undistributed corporate profits from the nonlabor share of factor earnings.

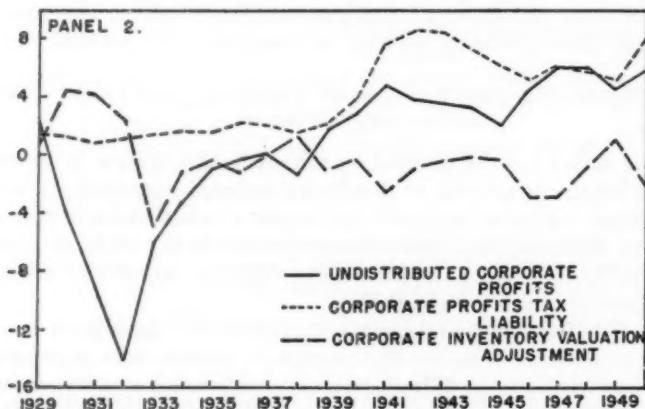
Similarly, it may be inappropriate to deduct contributions for social insurance from labor income, because considerable labor effort has been directed toward increasing the scope of social security. And, labor does benefit ultimately from these contributions.

An equally good case cannot be made against the exclusion of corporate profits tax liability, as nonlabor income earners can scarcely be considered

PER CENT



LABOR COMPONENT AS A PERCENTAGE OF NATIONAL INCOME



NONLABOR COMPONENTS AS A PERCENTAGE OF NATIONAL INCOME

CHART 3. Adjustment components as percentages of National Income.

beneficiaries of this tax. Thus, an equally good case cannot be made for the deduction of each of the adjustment components. For purposes of consistency, however, all undistributed components are in this paper deducted from national income in arriving at a measure of distributed national income.

These components are expressed individually as percentages of national income to determine their behavior (Chart 3). Generally, the major factors accounting for the discrepancy between  $L/NI$  and  $L/DNI$  are undistributed corporate profits and corporate profits tax liability. Undistributed corporate profits dropped sharply from 1929's 3.0 per cent of national income to 1932's minus 14.4 per cent of national income. As adjustment components are subtracted from their respective factor shares in arriving at  $L/DNI$ , the deduction of this large negative item serves to increase the profit share of distributed national income. This is, of course, equivalent to decreasing  $L/DNI$  (Chart 4). Conversely, during the decade of the forties, the larger relative magnitudes of undistributed corporate profits and corporate profits tax liability raise  $L/DNI$  over  $L/NI$ .



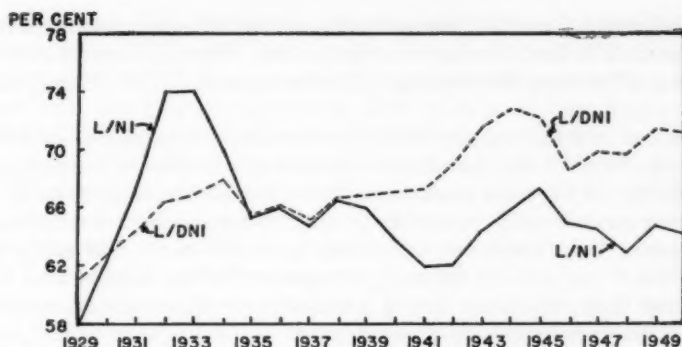


CHART 4. A comparison of labor's share of National Income and labor's share of Distributed National Income.

These adjustment components between national income and distributed national income are examined in greater detail below:

*Undistributed corporate profits:* The sharp drop in this component from 1929 to 1932 reflects the cyclical sensitivity of total corporate profits. The policy of many corporations of maintaining steady dividends, amplifies the swings in the *undistributed* portion of corporate profits. This, incidentally, acts as sort of a private "fiscal stabilizer" for the economy.

Subsequently, undistributed corporate profits, as a percentage of national income, moved steadily upward to a peak in 1941, with the exception of a decline in the sharp recession of 1938. During the remainder of the war years retained earnings as a percentage of national income declined, partly as a result of declining relative importance of total corporate profits, but mostly as a result of the high corporate net income and excess profits taxes. Undistributed corporate profits reached new heights in the post-war periods, and dipped rather sharply in the recession of 1949.

*Corporate profits tax liability:* Corporate profits tax liability fell from 1.6 per cent of national income in 1929 to 0.9 per cent in 1932; then increased steadily to a peak in the mid-war years of 1942 and 1943 of 8.5 per cent. The decrease from 1929 to 1932 is attributable primarily to the declining business activity and the cyclical sensitivity of corporate profits.

The increase from 1932 to 1942-43 reflects the increasing income of corporations and the imposition of new and higher tax rates. Corporate profits tax liability declined in the post-war years to a still substantial average of approximately six per cent of national income.

*Corporate inventory valuation adjustment:* Corporate inventory valuation adjustment is generally positive during periods of declining prices and negative during periods of rising prices. Thus, it tends to raise *L/DNI* in periods of depression and decrease it during periods of prosperity when accompanied by inflation. It, therefore, narrows the gap between *L/DNI* and *L/NI* both in periods of depression and prosperity.

*Contributions for social insurance plus excess of wage accruals over disbursements:* The sharp rise in this series in 1937 (Panel 2, Chart 3) reflects the beginning of the Social Security Act. This rise prevents  $L/DNI$  from rising even more.

*Summary:* Although all of these components helped account for the difference between  $L/NI$  and  $L/DNI$ , undistributed corporate profits and corporate profits tax liability had the most pronounced effect. The decline of these series in the depression was primarily responsible for the increase in labor's share of national income, over labor's share of distributed national income. The sharp rise of undistributed corporate profits and corporate profits tax liability into the war years, and their importance during the remainder of the decade, account for much of the increase of  $L/DNI$  over  $L/NI$ .

*Comparison of labor's share of distributed national income and labor's share of personal income*

Personal income contains transfer payments not included in either national or distributed national income. Government and business transfer payments are added to the labor component of  $DNI$ , and government interest is added to the nonlabor component. The fact that these payments increase the purchasing power of their respective factors, provides the justification for this additional measure of labor's share.

Although the combined government and business transfer payments are con-

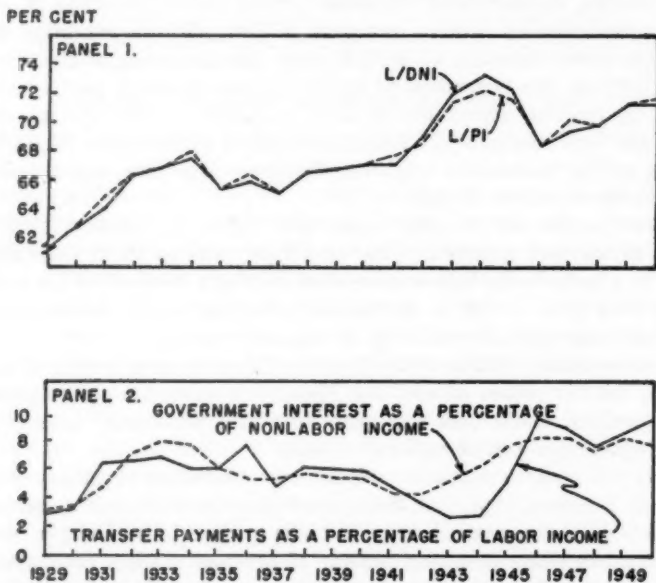


CHART 5. A comparison of labor's share of Distributed National Income and labor's share of Personal Income in terms of their adjustment components.

siderably larger than government interest, labor's share of personal income does not vary significantly from labor's share of distributed national income (Panel 1, Chart 5). As labor income is roughly double nonlabor income, labor income additions (transfer payments) have to be more than double nonlabor income additions (government interest) in order to increase labor's share. To determine the relative effects of these components, government and business transfer payments are expressed as a percentage of labor income,  $T_r/L$ , and government interest is expressed as a percentage of nonlabor income,  $R_g/P$ . These two series are recorded in Panel 2, Chart 5. When  $R_g/P$  exceeds  $T_r/L$ ,  $L/DNI$  will exceed  $L/PI$  (Panels 1 and 2, Chart 5).

As the most significant spread between  $L/DNI$  and  $L/PI$  occurs in 1943-1945 period, it is to be expected that the spread between  $R_g/P$  and  $T_r/L$  is greatest in this period. Transfer payments as a percentage of nonlabor income remain comparatively small and stable in the fully employed war-time economy of 1943 and 1944; they rise in the transitional year of 1945 largely because of the veterans' programs. However,  $T_r/L$  still remains substantially below  $R_g/P$  in 1945. The sharp rise in  $R_g/P$  in this period of 1943-1945 reflects primarily the growing importance of the federal debt. Thus, the relationship between the adjustment components,  $T_r$  and  $R_g$ , is such as to pull  $L/PI$  below  $L/DNI$  in its peak period, 1943-1945.

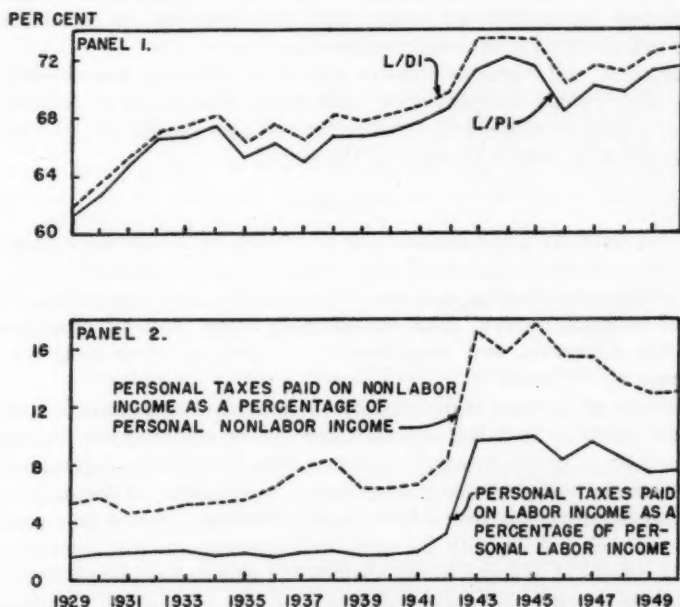


CHART 6. A comparison of labor's share of Personal Income and labor's share of Disposable Income in terms of their adjustment components.

*Comparison of labor's share of personal income and labor's share of disposable personal income*

Disposable personal income, differs from personal income, by the exclusion of personal tax and nontax payments. These payments, as allocated to the factor shares by Frane and Klein, are divided by their respective shares and compared in Panel 2, Chart 6. As personal taxes take a higher percentage of personal nonlabor income than of personal labor income (Panel 2, Chart 6), labor's share of disposable personal income is greater than labor's share of personal income (Panel 1, Chart 6).

*Summary: Comparison of labor's share of national income and labor's share of disposable personal income*

As the comparison between labor's share of national income and labor's share of disposable income proceeded via two intermediate stages, a brief summary of the more important adjustment components is in order. Undistributed corporate profits and corporate profits tax liability account for much of the gap between the two measures of labor's share. By declining sharply in depression they increase  $L/NI$  over  $L/DI$ ; by rising sharply in prosperity they increase  $L/DI$  over  $L/NI$ . As corporate inventory valuation adjustment is generally positive during periods of declining prices and negative during periods of rising prices, it tends to narrow the gap between the two measures of labor's share over most of the twenty-two year period. Contributions for social insurance tend to pull down  $L/DI$  but not significantly.

Government and business transfer payments virtually cancel each other, leaving labor's share comparatively unaffected. As the ratio of personal taxes to factor income is consistently greater for nonlabor income than for labor income,  $L/DI$  is increased throughout the period.

*Conclusion*

It is apparent from the comparisons presented in the previous charts, that the cyclical and secular pattern of change in labor's share is significantly altered by the particular statistical measure employed. The more conventional "labor's share of national income" rises considerably more than all other measures during the depression, and considerably less than all other measures during the decade of the forties.

The choice of measure is dictated by the problem being studied. And, as no particular problem is being analyzed here, it is inappropriate to express a preference for a specific measure. However, with the growing importance of the various tax and undistributed income items, labor's share of disposable income may be an improvement over labor's share of national income as a measure of labor's well being. Also, with the new distributive shares it is possible to consider the effects of changes in the various tax and undistributed items. All of this tends to suggest, that there are certain problems for which labor's share of disposable income is a more appropriate measure than labor's share of national income.

## WHY WAGES ARE LOWER IN RETAILING

JULES BACKMAN\*

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Wage scales are lower in trade, agriculture and the service industries, in general, than they are in manufacturing, construction and transportation. Similarly, within a major industrial group such as manufacturing, wages are higher in the automotive, aircraft and petroleum refining industries than in textiles, apparel and leather products.<sup>1</sup> Differentials in wage scales have existed for many decades. Today, as in the past, buyers and sellers still make bargains in the labor market at various rates, rather than at a single rate, even for the same labor grade.

Various economic factors have been singled out to explain why wage scales can be and are higher in some industries than in others. Professor Lester offers the following array:

Some industries have much higher wage scales (both for unskilled and skilled labor) than do other industries. In terms of both entrance rates for common labor and of average hourly earnings for all production workers, the following are high-wage industries not only in this country but also in Canada and Great Britain; petroleum refining, automobiles, railway equipment, chemicals, rubber tires and tubes, and aircraft. By the same token, wage scales are relatively low in such industries as tobacco, cotton textiles, leather and leather products, food preparation and canning, lumber, fertilizer and furniture.

Statistical comparisons indicate that an industry is likely to have relatively high average hourly earnings if (1) it has a large capital investment per worker; (2) labor costs are a low percentage of its total production costs; (3) employment in the industry has been expanding rapidly; (4) its productivity (output per worker) has been increasing more than the average for all industry; (5) the industry is highly unionized; and (6) its skill requirements are fairly high.<sup>2</sup>

Retail trade would rank relatively low on most of the six factors which are usually found to be associated closely with higher wage scales. While data are lacking or incomplete in some instances, a brief review of the available evidence clearly reveals why wage scales are relatively lower in retail trade.

### CAPITAL INVESTMENT PER WORKER IN RETAIL TRADE

Investment per worker in retailing is far lower than in manufacturing or other sectors with relatively high wage scales. The total capital invested in

\* I wish to extend my thanks to Marvin Levine, Instructor in Economics at Brooklyn College, for assistance in compiling the statistical data and to M. R. Gainsbrugh, Chief Economist of the National Industrial Conference Board, for a critical evaluation of the manuscript.

<sup>1</sup> According to the U. S. Bureau of Labor Statistics, in February 1956 average hourly earnings were \$1.54 for retail trade (except eating and drinking places) as compared with \$1.95 for all manufacturing industries. The average for automobiles was \$2.28, for aircraft parts \$2.21, and for petroleum refining \$2.57.

<sup>2</sup> Richard A. Lester, *Labor and Industrial Relations* (New York: Macmillan Company, 1951), pp. 56-57.



TABLE I  
CAPITAL INVESTED PER EMPLOYEE, CORPORATE RETAILING, 1948

	Capital Invested* (millions of dollars)	Total Paid Employee, Work-week ended nearest November 15	Capital Invested Per Employee
Total Corporate Retailing.....	18,498	3,617,359	\$5,114
General Merchandise Group.....	5,966	1,243,509	4,798
Food Group.....	1,919	441,840	4,343
Automotive Dealers and Filling Stations.....	3,156	399,667	7,897

\* Total assets less government obligations and other investments.

Sources: U. S. Department of Commerce, Bureau of the Census, *United States Census of Business, 1948*, Volume I, Retail Trade—General Statistics, Part 1, 1952, pp. 6.05-6.07; U. S. Treasury Department, Internal Revenue Service, *Statistics of Income for 1948*, Part 2, 1953, pp. 138, 140.

all manufacturing in 1952, for example, was \$159 billion, or almost \$12,000 per production worker. In such lower-paid industries as leather and apparel, it was about \$3,600 and \$4,200, respectively; for primary metals and automobiles, it was about \$14,000 and \$15,000, respectively.<sup>3</sup>

Data for retailing may be derived by relating the estimates of capital invested in corporate retailing (*Statistics of Income*) to the corresponding number of corporate employees (as shown in the Census of Business). This yields about \$5,100 per employee.<sup>4</sup> (See Table I.) An average of \$6,200 can be derived, using only full-time workers, but invested capital should be spread over all employees, since stock, equipment, space, etc., must be adequate to meet peak seasonal or weekend volume as well as normal loads.

Even this average is not an entirely adequate measure, since it embraces the substantially higher capital invested per employee of automotive dealers and filling stations. For the automotive group, assets per worker in 1948 were nearly \$8,000. For the general merchandise group, the average is only about \$4,800, while for food it is about \$4,350. The average would be moderately higher currently.

The National City Bank of New York determined capital investment per employee for the nation's 100 largest companies in 1952. It found that capital investment among these giant firms averaged about \$15,000 per employee for the group as a whole. For the 15 wholesale and retail trade corporations, the investment per job averaged \$8,000.<sup>5</sup>

But these figures alone do not tell the entire story. *The industrial worker has available large masses of equipment and machinery. This machinery has made it possible for him to increase his output and productivity enormously.*

<sup>3</sup>National Industrial Conference Board, *The Economic Almanac, 1956* (New York: Thomas Y. Crowell Company, 1956), pp. 294, 298.

<sup>4</sup>For all manufacturing industries, the average capital invested was about \$8,600 per employee in 1948.

<sup>5</sup>National City Bank of New York, *Monthly Letter*, July 1953, p. 82.

In turn, he is then able to obtain higher wages. Moreover, this capital equipment is being improved all the time. The retail trade employee does not have the same advantage. He is limited in his output potential as compared with the worker using machines. *Capital investment in retail trade takes the form of inventories and space.* While larger inventories may reduce the number of lost sales, this is a minor factor in comparison with the impact of capital equipment in industry. *Such investments do not add significantly to the retail worker's productivity and hence to his earnings potential.*

#### PERCENTAGE OF LABOR COSTS TO TOTAL COSTS IN RETAILING

Quite frequently wage costs in retailing are compared with sales, and the resulting ratio is then cited as evidence of the low labor cost characteristic of retailing. Retailing is the last step in the long cycle of extraction, production, transportation and distribution through which most goods pass before they reach the ultimate consumer. This means that much, if not most, of the final value of an end-product is already incorporated in a product when it enters retail channels. And the retailer has available for allocation to employees, stockholders, rent, taxes and other expenses only the differential between his income from sales and the cost of goods sold. As a result, *the sales base is highly inappropriate as a measure against which labor costs can be set to determine the impact of change in wage scales in retailing—or to compare relative labor costs in retailing with manufacturing or other sectors of industry.*

Far more meaningful in determining the true labor content of retailing is the "value-added" or "income produced" approach. Here, labor costs are related to the net value added to a good by the retailing process itself. These *relative* costs can then be contrasted with similar value-added data for other industries to determine whether or not retailing labor costs form a high or low percentage of true production costs.

TABLE II

INCOME ORIGINATING IN RETAIL TRADE AND AUTOMOBILE SERVICE, 1952

	Millions of Dollars
Total employee compensation.....	21,939
Income of unincorporated enterprises.....	9,863
Unincorporated inventory valuation adjustment.....	150
Corporate profits before taxes.....	2,917
Corporate inventory valuation adjustment.....	115
Net interest.....	17
Total income originating in retailing.....	34,967

*Note:* Data on specific factor payments in retailing are not available for 1953 and 1954<sup>1</sup> but are instead combined with data for wholesale trade in *National Income Supplement*, 1954, and *Survey of Current Business*, July, 1955. Revised and comparable data for 1952-54 in millions of dollars are: total income originating, 1952, 33,817; 1953, 34,798; 1954, 34,872; and employee compensation, 21,212; 22,553; 23,046; respectively.

Using data contained in the national income accounts, the net value added to production by the retailing industry can be measured by summing payments to the various factors of production in that industry (so-called factor costs). This is shown in TABLE II.

Directly identifiable labor costs in 1952 accounted for about five of every eight dollars of net income produced by the retailing industry. This is, indeed, a striking contrast to the quick dismissal of retailing labor costs implied in the statistic that the retail payroll averages only 10 cents of each consumer retail dollar. And this more meaningful measure of retail labor costs has been rising steadily since the war's end.<sup>6</sup>

Year	Labor Costs As % of Net Income
1946	55.3
1949	61.3
1950	62.0
1951	62.7
1952	62.0
1953	64.8
1954	66.1

In any comparison with other industries, the error is further compounded if it is not recognized that even this figure does not include the *full* measure of labor costs, since the labor compensation of the owner-proprietor is excluded from total employee compensation. Such compensation appears as part of the income of unincorporated enterprises which in 1952 accounted for nearly \$10 billion of the \$35 billion of total income originating in retailing. In contrast, entrepreneurial income in manufacturing, which is preponderantly corporate in character, totaled only about \$1 billion out of the nearly \$90 billion produced in manufacturing.<sup>7</sup>

Entrepreneurial income is a compound of payments; it includes, where earned, a return on the investment of the owner-proprietor as well as compensation for his own labor and for that of the members of his family. Most students of national income accounting are inclined to view entrepreneurial income far more as a payment for labor than as payment for the use of capital. The small scale character of much of noncorporate retailing suggests that most of the net income of such enterprises could safely be assigned to labor costs. Thus, in 1948 the roughly 1¼ million individual proprietorships reported by the Bureau of the Census had sales of about \$45 billion. This would yield average sales of about \$36,500. Were the owner and his unpaid family help to impute their salaries at prevailing rates, there would be little net payment for capital remaining on annual sales of that amount. Certainly most of the retail units with no paid employees— or even with one or two— are by their very size of the type in which any true accounting would reveal that virtually all "net" income was labor in character.

<sup>6</sup> U. S. Department of Commerce, *National Income Supplement*, 1954, pp. 176-179; *Survey of Current Business*, July, 1955, p. 14.

<sup>7</sup> *Survey of Current Business*, July 1953, pp. 17-18.

In 1952, the National Income Supplement (1953) revealed about two million active proprietors in retailing. The net income of all unincorporated retail enterprises was somewhat less than \$10 billion. This would yield an average income of only \$5,000 per active proprietor. Including the services rendered by other members of his family and the lengthy hours required of most proprietors of small stores, this does not seem to leave much for "payment on capital."

Allowance for labor costs of the owner-enterprises, therefore, significantly conditions any comparison of retailing, particularly with other sectors heavily corporate in character. The more heavily corporate in character, the more labor costs appear as employee compensation rather than entrepreneurial income. *Labor costs in retailing plus the income of unincorporated enterprises totaled \$31.8 billion in 1952. This was equivalent to 90.9 per cent of all income originating in retailing. For manufacturing, in contrast, compensation of employees accounted for 75.2 per cent of total income originating; entrepreneurial income 3 per cent; total employee compensation and entrepreneurial income was 78.2 per cent.* It is clear that even if only part of the entrepreneurial income is considered as labor income, labor costs in retailing are higher than in manufacturing.

Professor Abersold has summarized the relationship between the level of wage costs and hourly wages as follows:

Wage levels resulting from multi-employer bargaining are also affected to a certain extent by the relationship of labor costs to total costs. *Those industries in which labor costs are low in comparison to the value added by manufacture or to the selling price of their product are better able to stand higher wage levels because of the relatively small effect that such wage costs will have on their total costs and upon their earnings position.* This is borne out by a recent National Industrial Conference Board study.\* The chemical, oil, automotive, news and magazine printing industries illustrate its application. It would appear also that such industries would not need to lower wage levels as much during periods of business depression because they can obtain only moderate reductions in over-all costs by such action. *There is some tendency for industries in which labor costs are high in comparison to the value added by manufacture or to the selling price of their product, to pay lower hourly wages.\** The shoe and textile industries are examples."<sup>10</sup> (Italics added.)

In summary, then, labor costs are high in retailing when viewed relative to what the retailer had left to dispose of, after meeting his cost of goods sold. Including allowance for the labor services of noncorporate owner-enterprises, labor costs in retailing are significantly higher than in manufacturing and most other sectors of industry.

\* Jules Backman and M. R. Gainsbrugh, *Behavior of Wages*, Studies in Business Economics No. 15 (New York: National Industrial Conference Board, 1948), p. 47.

\* *Ibid.*, p. 52.

<sup>10</sup> John R. Abersold, *Problems of Hourly Rate Uniformity* (Philadelphia, Pa.: University of Pennsylvania Press, 1949), p. 9.

THE TREND IN RETAIL TRADE EMPLOYMENT HAS BEEN SIMILAR  
TO THE NATIONAL TOTAL

Employment in retail trade is 1½ million greater than it was at the end of World War II, and about 3 million more than in 1939. On a *relative* basis—and this is the important criterion for this analysis—the proportion of paid employees in retailing to total civilian nonagricultural employment (BLS data) is virtually the same as it was five years ago, or pre-World War II. As shown in Table III, paid employees in retail trade comprised 15.9 per cent of total civilian nonagricultural employment in 1954, 16.1% in 1949, and the same proportion in 1939.

Similar data for trade, including the self-employed and unpaid family workers, are not available on an annual basis. The data contained in Table IV

TABLE III  
EMPLOYMENT IN RETAIL TRADE, SELECTED YEARS, 1939-1955

Year	Total Civilian Nonagricultural Employment*	Retail Trade*	Retail Trade As % of Total Civilian Nonagricultural Employment
	<i>thousands</i>		
1939	30,311	4,890	16.1
1946	41,287	6,365	15.4
1949	43,315	6,975	16.1
1950	44,738	7,074	15.8
1951	47,347	7,352	15.5
1952	48,303	7,537	15.6
1953	49,681	7,744	15.6
1954	48,285	7,702	16.0
1955	49,398	7,872	15.9

\* Excludes proprietors, self-employed, unpaid family workers, domestics, etc.

Sources: U. S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings*, May 1955, pp. 49, 54; February 1956, pp. 1, 6. U. S. Department of Labor, Bureau of Labor Statistics, *Employment, Hours and Earnings in Retail Trade, 1939-1950*, pp. 1, 3.

TABLE IV  
TOTAL EMPLOYMENT IN TRADE, 1940 AND 1950

	1940	1950	As % of Total Civilian Nonagricultural Employment	
			1940	1950
			<i>thousands</i>	
Total civilian nonagricultural employed.	36,392	49,234	100.0	100.0
Employed in trade.....	7,546	10,548	20.7	21.4
Wholesale.....	1,205	1,975	3.3	4.0
Retail.....	6,341	8,571	17.4	17.4

Note: Includes proprietors, self-employed, unpaid family workers, etc.

Sources: U. S. Department of Commerce, Bureau of the Census, *Census of Population: 1960*, Volume II, Part 1, Washington 1953, pp. 1-103, 1-104.



are derived from the decennial Census of Occupations. They show that for retail trade, the ratio was 17.4 per cent in 1940 and 1950. Here, again, therefore, we find that the rise in retailing employment has been the same as that for the national economy as a whole. *In terms of the increase in labor requirements, therefore, there has been little difference between retail trade and the balance of the economy during the past 15 years.*

#### RETAIL TRADE PRODUCTIVITY

Productivity data for retailing are not too adequate. In a recent study for the National Bureau of Economic Research, Harold Barger reported that output per manhour in trade advanced 1.0 per cent yearly from 1869 to 1949. During the period from 1909 to 1949, it rose 0.9 per cent yearly. He further pointed out that the smaller increase in distribution productivity in contrast to other segments of the economy was due to the "relative sparsity of technological innovations."<sup>11</sup> The rate of increase of productivity in trade has been substantially lower than that for other sectors of the economy characterized by higher wage scales. The rate of increase for manufacturing from 1899 to 1953 has been about 3 per cent per year.<sup>12</sup> For the national economy, Kendrick found the annual increment in productivity to be roughly about 2 per cent since 1909.<sup>13</sup>

A rough approximation of the relatively low productivity per employee in trade is presented below. The income originating in trade, as estimated in the national income accounts, has been matched against the total number of full-time employees in trade, including entrepreneurs. This *income produced per person engaged in trade* is then compared with corresponding estimates for other sectors of the economy. This comparison makes no allowance for the longer workweek prevailing in trade than in many other industries. In 1954, for example, hours worked in all non-farm industries and in trade were as follows:

<i>No. of Hours</i>	<i>All Non-Farm Industries (% of total)</i>	<i>Trade (% of total)</i>
Under 34 .....	16.1	18.2
35-39 .....	5.9	4.8
40 .....	48.1	33.2
41 and over .....	29.9	43.8

Source: U. S. Department of Commerce, Bureau of the Census, *Annual Report on the Labor Force*, 1955, pp. 31-32.

<sup>11</sup> Harold Barger, *Distribution's Place in the American Economy Since 1869*, National Bureau of Economic Research (Princeton, N. J.: Princeton University Press, 1955), pp. 39, 52.

<sup>12</sup> Solomon Fabricant, *Employment in Manufacturing, 1899-1939* (New York: National Bureau of Economic Research, 1942), p. 331 for data from 1899 to 1939 and U. S. Department of Labor, Bureau of Labor Statistics, "Trends in Output Per Man-Hour and Man-Hours Per Unit of Output—Manufacturing, 1939-53," *BLS Report No. 100*, 1955, p. 315 for data from 1939 to 1953.

<sup>13</sup> John W. Kendrick, "National Productivity and its Long-Term Projection," in *Long-Range Economic Projection*, Studies in Income and Wealth, Volume Sixteen, Conference on Research in Income and Wealth, National Bureau of Economic Research (Princeton N. J.: Princeton University Press, 1954), p. 95.

As a result, productivity per man-hour would be significantly lower, on a relative basis, than in the per-person-employed comparison.

Arranged in descending order, the relative income produced per person engaged in 1954 by major industries was as follows:

Finance, Insurance and Real Estate.....	\$12,247
Communication and Public Utilities.....	7,711
Mining.....	6,462
Manufacturing.....	5,552
Transportation.....	5,305
Trade.....	4,344
Contract construction.....	4,323
Services.....	3,718

Income produced per trade employee (including entrepreneurs) was lower than in any other major industrial group, excepting only contract construction and the service industries. Using these figures as a rough measure of production per person engaged, production in trade was nearly a fourth lower than in manufacturing. Income produced per man-hour would undoubtedly reveal an even wider spread, because of the longer workweek in retail trade. It would be expected, therefore, that hourly wages in retail trade also would be sharply lower than in manufacturing industries. (Hourly wages in retail trade are about one-fifth lower than in manufacturing industries.)

In the main, the income produced per employee is highest in the industries where capital investment per employee is greatest: public utilities, mining, and manufacturing. It is significantly lower in trade and services, where opportunities are limited to "lengthen the arm of the worker" through providing more tool power.

It is probable that productivity has increased to some extent in trade. The development of supermarkets, the growth of large shopping centers and the mechanization of handling and transportation within the entire system of distribution, have undoubtedly contributed toward greater efficiency. But economies of scale are difficult to achieve where convenience and service play important roles as they do in trade. Thus, *while productivity has undoubtedly increased in trade, the limited data available lend support to the thesis that productivity has increased at a significantly lower rate in trade than in manufacturing and other sectors of the economy characterized by relatively higher wage scales.*

#### RELATIVELY LOWER SKILLS (AND YOUNGER AGE) IN RETAILING

Another significant factor in this analysis of the relatively lower wage scales of retailing is the low skill required of much of the labor force engaged in retailing. This factor is reflected in the high percentage of younger workers and the large number of part time workers it employs. Thus, for example, about 10 per cent of the persons employed in wholesale and retail trade (the only category reported) are less than 20 years of age as compared with 4.7 per cent in manufacturing industries. About 19 per cent of the employees in retailing

work part time. For variety stores about one-third of the employees work part time while for specialty stores the proportion is about one-fifth. Melvin Rothbaum and Harold G. Ross account for this low-skill, young age aspect of retailing as follows:

Such groups as *wholesale and retail trade, laundries and hotels* have a number of inter-related labor force characteristics that may lead to diversity (in wages). They employ large numbers of women and minority groups, both of which have high turnover rates. In addition, these industries tend to be *intrastate* and, therefore, not subject to the federal minimum wage act. Thus, we have industries that legally can and do pay low rates, *using as their unskilled labor force many people who are unemployable in manufacturing* (because of age, disability, turnover characteristics, and minority-group discrimination) except in peak employment periods. *Finally, they may provide both a starting point for young people just entering the labor force but who have no intention of staying in the service and trade industries, and a dumping ground for manufacturing unskilled labor when there is unemployment...*<sup>14</sup> (Italics added.)

The situation in retailing in connection with degrees of skills required appears to be markedly different from that in the high wage industries. The large proportion of relatively unskilled workers, who are the lower paid workers, necessarily pulls down the average wage reported for retail trade. The employment of a large number of part-time workers, who tend to be paid the starting wage, has a similar effect on the reported average hourly earnings. Despite these figures, there are many well paying jobs in retailing. Retailers must compete with other industries for skilled employees and must pay wages which will attract such workers. Nevertheless, there is a high proportion of workers in retailing who receive the lower wage scales because of the small amount of skill required on their jobs.

#### UNIONIZATION IN RETAIL TRADE

There has been relatively little unionization in the retail trades. It has been estimated that only about 7 per cent of the employees in retailing are unionized, with the heaviest unionization in the retail food establishment.<sup>15</sup> This is in direct contrast to manufacturing where close to 55 per cent of the employees are unionized.<sup>16</sup>

There are a number of reasons for the relatively small growth of unions among retail employees. Retailing is an industry that is characterized by many small establishments in contrast to the significantly larger manufacturing enterprises. Many of those employed in these small retail firms are family workers. Unionization is exceedingly difficult in such an environment. The personal relationship that prevails in these establishments also acts as a deterrent to unionization. Many retail employees are "more management oriented in career outlook than

<sup>14</sup> Melvin Rothbaum and Harold G. Ross, "Interoccupational Wage Diversity," *Industrial and Labor Relations Review*, April 1954, pp. 378-379.

<sup>15</sup> Marten S. Estey, "Patterns of Union Membership in the Retail Trades," *Industrial and Labor Relations Review*, July 1955, p. 563.

<sup>16</sup> *Fortune*, June, 1956, p. 137. These estimates were based on AFL-CIO data.

factory workers, and less likely to seek gains or security through unionism."<sup>17</sup> From the union viewpoint, it would be very expensive to endeavor to organize retail employees in small firms.

Another factor that accounts for the differentiation of union strength in retailing and in manufacturing is the type of employee in each of these segments. Manufacturing is characterized by a very high proportion of full-time male workers. In contrast, retailing utilizes many part-time and seasonal workers as well as a high proportion of female and teen-age employees. Many of these workers are not interested in unionization. These groups have been among the most difficult to organize in the past. For example, the working life of a substantial number of women workers is limited by marriage and family responsibilities.

Retail stores are found in every hamlet in the country. However, unionization of retail employees is confined mainly to the large cities. It has been estimated that out of 275,700 retail union members in 14 cities about one-third are found in New York.<sup>18</sup> This, too, is in contrast to manufacturing where union members are found in both large and small urban areas. Because of these reasons, mass unionization of the retail trades has not developed up to the present and will be confronted with serious problems in the future.

#### SUMMARY AND CONCLUSIONS

Wages are generally lower in retailing than in manufacturing and other sectors of the economy for the following reasons:

(a) There is a smaller capital investment per employee in retailing (\$5,000) than in manufacturing (\$12,000). These figures do not tell the entire story. The industrial worker has available large masses of equipment and machinery which make it possible for him to increase his output and productivity enormously. The investment in retail trade is primarily in inventories and in space. They do not add significantly to the retail worker's productivity and hence to his earnings potential.

(b) Directly identifiable labor costs accounted for about five out of every eight dollars of income left to retailers after cost of goods sold in 1952. If allowance is made for the income of proprietors of unincorporated enterprises, then the total labor cost in retailing is equivalent to 90.9 per cent of all income originating in retailing; for manufacturing the comparable figure was 78.2 per cent. An overwhelming proportion of the income available to pay wages is already used for that purpose in retailing—for large stores and small stores alike.

(c) Productivity in retail trade has lagged considerably behind the gains for the entire national economy and for manufacturing. Income produced per man-hour in retailing appears to be more than one quarter less than the total for all manufacturing industries. It would be expected, therefore, that retail wages also would be lower.

<sup>17</sup> F. Theodore Malm, "Recruiting Patterns and the Functioning of Labor Markets," *Industrial and Labor Relations Review*, July, 1954, p. 522.

<sup>18</sup> Estey, *op. cit.*, p. 562.

(d) A large proportion of the retail trade labor force is young and unskilled or low skilled.

(e) There is relatively little unionization in retailing.

Relatively lower capital investment per worker, and particularly the differences in the use of capital, relatively higher labor costs, smaller changes in productivity, and lower skill requirements—these factors distinguish retailing from the higher wage industries.



## FISCAL PROBLEMS OF THE TENNESSEE VALLEY STATES

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This paper presents state and local financial data for seven states which contain parts of the Tennessee River basin: Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee, and Virginia, and notes some relationships between fiscal problems and expanding governmental services and economic growth. Among the seven states there are, of course, many differences as well as similarities. They cannot be said to constitute a single economic or geographic region, but among them they are confronted with stubborn fiscal problems and faced with difficult fiscal decisions. These problems are increasingly evident in a period of prosperity when state and local jurisdictions are collecting more taxes than ever before. Expenditures, at all-time high levels, are gaining more rapidly than revenues. Budget-balancing is a perennial issue of each of the states and of most of their local jurisdictions.

### I

State and local governments in the seven states collected \$1,975 million in taxes for the fiscal year 1953 according to estimates released by the Bureau of the Census. Additional revenues from Federal aid and from charges for services and miscellaneous sources were \$785 million. In per capita amounts state and local tax yields were \$87; Federal aid, \$19; and charges and miscellaneous revenues, \$16; resulting in total general revenues of \$122 per capita.<sup>1</sup> General revenues of state governments alone were 10 per cent higher in 1955 than in 1953.

The property tax is the most important source of state and local tax revenue. Other levies in the order of their importance are the motor fuels taxes, general sales taxes, income taxes, and selective sales and gross receipts taxes consisting primarily of levies on alcoholic beverages, tobacco, insurance, and public utilities. In 1953 property taxes yielded 31 per cent of all tax revenues in the seven states in comparison with 46 per cent in the other forty-one states. Levies measured by sales, on the other hand, accounted for 44 per cent of the total in the seven states but only 33 per cent in the other states. The major differences in sales levies is the relatively heavy motor fuels tax in the seven states. Although per capita taxes in the seven states were only 61 per cent as large as in the forty-one states, the collections in the two areas represented substantially the same percentages of individual income payments. State and local taxes in 1953 were

<sup>1</sup> Data from Bureau of the Census, *State and Local Government Revenues in 1953*. Additional funds were obtained from liquor stores, utility enterprises, borrowings, and from payroll levies for insurance trust funds. Net revenue from liquor stores was \$36 million in the three states of Alabama, North Carolina, and Virginia. Available data do not show the net returns from utility operation. Contributions to insurance trust funds were \$143 million during the fiscal year.

TABLE I  
COMPARATIVE YIELDS BY MAJOR TAX LEVIES FOR THE SEVEN STATES  
AND THE OTHER FORTY-ONE STATES, 1953

Taxes	Percentage		Per Capita		Per \$1000 of Individual Income*	
	7 states	41 states	7 states	41 states	7 states	41 states
Property .....	31%	46%	\$27	\$66	\$24	\$36
Motor fuels .....	18	9	16	13	14	7
General sales .....	15	14	13	19	11	11
Income .....	12	8	11	12	9	6
Selective sales .....	11	10	9	14	8	8
Other .....	13	13	11	19	10	10
	100%	100%	\$87	\$143	\$76	\$78

Source: Data obtained from Bureau of the Census: *State and Local Government Revenue, 1953*, and *State Government Finances, 1953*.

Motor fuels and income taxes include state levies only. Any local levies on motor fuels and incomes are included under "Selective sales" and "Other" taxes, respectively.

\* Personal incomes per capita were \$1,217 for the seven-state area and \$1,886 for the other forty-one states in 1953, according to data reported in U. S. Department of Commerce, *Survey of Current Business*, September 1955, pp. 14-17.

\$76 for each \$1,000 of individual income in the seven states and \$78 in the other forty-one states. Table I shows the above comparisons by taxes or groups of taxes.

Although averages obscure important state variations, each of the seven states obtains a smaller than national average percentage of state and local tax revenue from the property tax and a larger than average percentage from the motor fuels tax. Property tax yields in the seven states ranged from 25 per cent of all taxes in Alabama to 40 per cent in Kentucky; in Nebraska and New Jersey the property tax supplied two-thirds of all tax revenues and a dozen other states collected over half of state and local tax revenues from the property tax. The motor fuels tax furnished from 16 to 19 per cent of state and local tax revenues in each of the seven states in comparison with an average of 9 per cent in the forty-one states, and with 4 per cent in New York, 6 per cent in Massachusetts, and 8 per cent in Illinois and Michigan. Kentucky and Virginia do not tax general sales, whereas, in Alabama and Georgia the general sales tax produced one-fourth of all state and local tax revenues. Primarily because of the differences in taxable transactions as defined in tax laws the 1954 state general sales tax collections per \$1,000 of retail sales from a 3 per cent rate were \$37 in Georgia, \$28 in Alabama, and \$18 in North Carolina.<sup>2</sup> North Carolina and Virginia do not tax tobacco products. The other five states obtain about \$3 per capita from this source. Each of the seven states has a corporation income tax and each except Tennessee has an individual income tax. Among the 41 states there are 19 which do not have individual income taxes and 16 which do not

\* State data for 1954 are from Bureau of the Census, *State Government Finances in 1954*.

TABLE II

PER CAPITA STATE AND LOCAL TAX REVENUE BY MAJOR SOURCES, SEVEN STATES, 1953

	Property	Motor Fuels	General Sales	Selective Sales	Income	Other	Total
Alabama.....	\$18	\$13	\$18	\$ 8	\$ 6	\$12	\$75
Georgia.....	29	15	28	10	8	6	96
Kentucky.....	32	15	—	11	10	12	80
Mississippi.....	25	16	16	7	7	10	81
North Carolina.....	26	18	13	7	18	12	95
Tennessee.....	27	16	16	11	6	13	88
Virginia.....	31	16	—	10	16	16	90

Source: Bureau of the Census, *State and Local Government Revenues in 1953*, and *State Government Finances in 1953*. Motor fuels and income taxes shown are state levies only.

tax corporate income. Table II shows the per capita 1953 tax yields for each of the seven states by major levies.

The comparatively light use of the property tax in the seven states has come about over a considerable period of time. Property taxes were 80 per cent of state and local tax revenues for both the seven states and all states in 1913. From 1932 to 1942 the ratios dropped from 61 per cent to 35 per cent for the seven states and from 74 per cent to 47 per cent for all states. Property tax yields actually declined in amount from 1932 to 1942, and the rate of increase since 1942 has been somewhat lower than for non-property taxes. The relative decline of the property tax, which is primarily a local levy, helps explain why local governments in the seven states collected only 35 per cent of 1953 state and local taxes in comparison with 51 per cent for the other forty-one states. The more rapid rate of decline in the seven states appears to be attributable to comparatively low per capita incomes and wealth and to fiscal problems associated with the depression of the 1930's.<sup>3</sup>

The depression of the 1930's gave the property tax in the Southeast a blow from which it has not fully recovered.<sup>4</sup> Widespread property tax delinquencies strengthened arguments for the use of other revenue sources. Homestead exemptions, tax rate limitations, and special tax concessions to attract industry have made serious inroads into property tax yields. The property tax has been branded as an excessive burden to home owners and the epitome of administrative abuse and inefficiency. "Inequitable assessment of individual properties is apparently the most common, the most significant, and by far

<sup>3</sup> For a discussion, see James W. Martin, *Southern States and Local Finance Funds and the War*, University of Kentucky, 1945, pp. 6-9. The relative decline in the property tax may also reflect an above average increase in non-property taxes. The current relatively high non-property taxes in the seven states are indicated by tax rates. Five of the 10 states with motor fuels taxes as high as 7 cents a gallon in 1955 were in the seven-state area. Five of the 14 states with general sales levies of 3 per cent or above are in this area.

<sup>4</sup> See Hoover and Ratchford, *Economic Resources and Policies of the South*, 1951, pp. 198-199.

the most demoralizing of all problems of property tax administration."<sup>5</sup> Efforts toward administrative improvements receive limited public support partially because such reforms are associated in the minds of taxpayers with higher property levies. Groups interested in larger public appropriations find wider public endorsement if the necessary funds are to be raised by the state rather than by local units. The heavy rural representation in the legislatures is generally favorable to the extension of state fiscal responsibilities. Although these factors probably reflect national tendencies, they are somewhat more pronounced in the Southeast.

State and local revenues from charges and miscellaneous sources were \$16 per capita in the seven states and \$24 for the other forty-one states for 1953. These figures are in the same proportion as individual incomes in the two areas. Federal aid was between \$18 and \$19 per capita for both areas. Although substantially equal in per capita amounts, these grants added 15 per cent to general revenue in the seven states but only 10 per cent in the other states.<sup>6</sup>

## II

State and local governments, like individuals and business enterprises, tend to borrow more freely when economic conditions are good. For the seven-state area, state and local debts gained at a rate above the national average during the prosperous years of the 1920's and declined above the national average rate during the thirties. Many jurisdictions experienced difficulties with their debts during the depression and were sometimes forced to fund or refund obligations on unfavorable terms.<sup>7</sup> Determined efforts were made to balance budgets, to protect credit standings, and to install fiscal management policies to promote orderly debt retirement and to safeguard future borrowings.

Debts were reduced rapidly during World War II because increased economic activity resulted in higher tax collections and wartime restrictions held down state and local expenditures. Rising price levels also lessened the relative size of the outstanding debt. Soon after the end of the War state and local debts began to increase. The accumulated needs for capital outlays, higher personal incomes, and industrial growth helped overcome the depression-born objections to borrowing. The net long-term debt of the seven states rose from \$205 million in 1948, to \$543 million in 1953, and to \$874 million in 1955, as reported by the Census. The information available suggests that local debts, which were

<sup>5</sup> C. C. Taylor and G. H. Aull, *Property Tax Problems in the Southeast*, South Carolina Agricultural Experiment Station, Bulletin 414, January 1954, pp. 15-16.

<sup>6</sup> For an analysis, see Howard G. Schaller, "Federal Grants-in-Aid and Differences in State Per Capita Incomes, 1929, 1939, and 1949," *National Tax Journal*, September 1955, pp. 287-299.

<sup>7</sup> Tennessee perhaps experienced the most serious state debt situation because of inefficient administration and dishonesty combined with the depression. For a discussion, see Ratchford, *American State Debts*, 1941, pp. 407-428. The State of North Carolina, which reported 62 counties and 152 cities in default on debt obligations in 1933, set up a Local Government Commission to give a measure of state control over local debt and local government finances. *Report of Local Government Commission*, 1936, p. 5.

three times the size of state debts in 1942, have likewise grown at a rapid rate. The debts of cities of 25,000 population and over in the seven states were \$973 million in 1954, or one-third larger than the figure for 1952. State and local debts of the seven states, which were equal to one-third of personal incomes in 1931, were less than 10 per cent of such incomes in 1952. For all states the ratios were 22 per cent in 1931 and 10 per cent in 1952.

Per capita net state debts ranged from \$18 in Alabama to \$60 in Georgia for 1955.<sup>8</sup> For that year Georgia and North Carolina had per capita state debts which were the highest in the seven states and approximately equal to the national average. Of the 56 cities of 25,000 or more population in these states the net long-term debts were less than \$100 per capita in 13 cities and more than \$250 in 9 cities.<sup>9</sup> The net indebtedness of Tennessee counties, to use one state as an example, averaged \$45 per capita in 1953 but there were 8 counties with debts of less than \$10 per capita and 4 counties with debts in excess of \$100 per capita.<sup>10</sup>

The use of revenue bonds or bonds not secured by the full faith and credit of the issuing government is increasing in the Tennessee Valley area as elsewhere in the Nation. The entire state debts of Georgia,<sup>11</sup> Kentucky, and Mississippi in 1954 were represented by non-guaranteed obligations. Most of the Virginia state debt is non-guaranteed. Alabama, North Carolina, and Tennessee use full faith and credit obligations. For the seven states one-half of the outstanding state debt was for highways and 30 per cent for education at the end of 1954. In comparison with national totals, debts of the seven states include relatively larger amounts for educational purposes.

### III

Expenditures represent the other half or the other side of the fiscal picture. State governments of the seven states reported general expenditures, including aid payments to local governments, of \$1,886 million in 1953. Although local expenditure data are not readily available, local taxes, charges, enterprise earnings, and borrowings provided a total of more than one billion dollars. Education, highways, and public welfare are the most expensive functions of state and local government. The current expenses and capital outlays for public schools were estimated at \$846 million for the school year beginning in 1953.<sup>12</sup> State expenditures for institutions of higher education were an addi-

<sup>8</sup> Bureau of the Census, *Summary of State Government Finances in 1955*, p. 16.

<sup>9</sup> Bureau of the Census, *City Government Finances in 1954*, Table 24.

<sup>10</sup> Tennessee Taxpayers Association, *County, City, and Town Government in Tennessee*, 1954, pp. 51-52.

<sup>11</sup> The Georgia State School Building Authority had bonds outstanding in the amount of \$148,856,000 as of June 30, 1955. The Authority finances the construction of buildings leased to local school systems. The rentals used to meet the debt service obligations are paid primarily from state aid funds advanced to support a minimum school program. See *State School Building Authority*, Report of Audit for year ended June 30, 1955.

<sup>12</sup> National Education Association, *Advance Estimates of Public Elementary and Secondary Schools for the School Year 1954-55*, p. 19.



tional \$167 million.<sup>13</sup> State highway expenditures combined with local revenues and borrowed funds available for highways were \$708 million for the seven states in 1953.<sup>14</sup>

Estimated public school costs per pupil enrolled in the seven states for the school year 1953-54 averaged \$135 for current expenses and \$32 for capital outlays. For the remaining forty-one states the figures were \$245 for current expenses and \$82 for capital outlays.<sup>15</sup> For the seven states the average salary for teachers was three-fourths of the national average and the average value of public school property per pupil was one-half the national average.<sup>16</sup> Highway and welfare expenditures on a per capita basis were around 80 per cent and 60 per cent, respectively, of such expenditures in the other states.<sup>17</sup>

The state governments in the Tennessee Valley region not only collect a relatively large share of the combined state and local revenues but also spend a relatively large share of the total available funds. After intergovernmental transfers, state governments in this area were the final recipients of 45 per cent of all state and local revenues in comparison with 32 per cent for the other forty-one states in 1953.<sup>18</sup> In each of the seven states the percentage of funds available for direct state expenditure was well above the forty-one-state average. The state government in North Carolina held 60 per cent of state and local funds after transfer payments because of direct state financing of schools.

State general expenditures, which include aid payments to local governments, were \$85 per capita for the seven states in comparison with an average of \$103 for the other states in 1954. As a group the seven states use a larger than average share of their funds for education and relatively smaller percentages for health and welfare programs and miscellaneous services. State funds used for education were \$31 per capita in the seven states in comparison with \$29 for the forty-one states in 1954.<sup>19</sup> The percentage distributions of state general expenditures by functions are shown in Table III for the seven states and for the other forty-one states.

Through state aid and direct state expenditures a substantial measure of

<sup>13</sup> Bureau of the Census, *State Government Finances in 1953*, p. 33.

<sup>14</sup> Bureau of the Census, *State Government Finances in 1953*, p. 34. Bureau of Public Roads, *Highway Statistics 1953*, pp. 89 and 93.

<sup>15</sup> Research Division, National Education Association, *Advance Estimates of Public Elementary and Secondary Schools for the School Year 1954-55*, pp. 19 and 21.

<sup>16</sup> See National Education Association, *Educational Differences Among the States*, March 1954, pp. 11 and 26.

<sup>17</sup> Data obtained from the U. S. Bureau of Public Roads, *Highway Statistics, 1953*, pp. 64, 90, and 94; and from the U. S. Department of Health, Education and Welfare, *Social Security Bulletin*, September 1954, p. 77.

<sup>18</sup> Bureau of the Census, *State and Local Government Revenue in 1953*, p. 17.

<sup>19</sup> The lower total expenditures for schools referred to above reflects the relatively low amount of local revenues available for schools. Revenues from local sources furnished 39 per cent of public school funds in the seven states in comparison with 64 per cent for the forty-one states according to estimates for the school year 1954-55. See National Education Association, *Advance Estimates of Public Elementary and Secondary Schools for the School Year 1954-55*, p. 18.

TABLE III  
PERCENTAGE DISTRIBUTION OF STATE GENERAL EXPENDITURES BY  
FUNCTIONS, SEVEN STATES AND FORTY-ONE STATES, 1954

	Percentages	
	Seven states	Forty-one states
Education.....	36%	29%
Highways.....	27	26
Welfare.....	14	16
Health and Hospitals.....	7	9
Natural Resources.....	4	4
Safety.....	3	3
Other.....	9	14
Total.....	100%	100%

Source: Bureau of the Census, *State Government Finances, in 1954*, p. 22.

equalization of public services is provided within each of the seven states. In Tennessee, for example, state aid in 1954 was from three to twelve times as large as locally collected revenues in 31 of the 95 counties.<sup>20</sup> The state aid program in that state had the effect of taking some \$30 million of taxes collected in 11 high income and relatively wealthy counties and distributing it among the remaining 84 counties.<sup>21</sup> Through state aid and direct state expenditures, Alabama, Georgia, and North Carolina each provided three times as much financial support for schools as the local jurisdictions.

#### IV

Fiscal data and issues present a separate story for each of the seven states; however, there are typical situations and problems. Many of these center around the levels of income and production, the rapid economic progress being made, and the shift of population from the farm to the urban and suburban areas. Per capita personal incomes in the seven states have moved up from one-half the national average in 1930 to two-thirds of the national average in 1954. Although the greatest relative gains were made during the war years, the Southeast is an area of rapid economic growth.<sup>22</sup>

The farm population in the seven states is declining but the urban and rural non-farm components are on the increase. From 1930 to 1950 the population of 34 counties with urban centers of 50,000 or more increased 50 per cent. The population of counties with smaller urban centers increased at a lower rate

<sup>20</sup> Tennessee Taxpayers Association, *Nineteenth Annual Survey of County, City, and Town Government in Tennessee*, 1954, p. 44.

<sup>21</sup> Tennessee Taxpayers Association, *Trends in Public Finance*, Research Report No. 101, January 1, 1954, pp. 33, 34.

<sup>22</sup> The Federal Reserve Bank of Atlanta in its 1955 annual report points out that, "So rapidly, indeed, is progress being made that the day when the South will stand at least at the level of the national average seems already in sight."

and for the 333 counties with no urban communities the population showed no increase. Since 1950 the rate of urbanization has accelerated. Industrial growth and the trend toward urbanized living make people more dependent on each other and on the services of state and local governments. Population movements to urban areas create extra demands for capital outlays to initiate such services. Shortages of school buildings, roads and streets, hospitals, utilities, libraries, and recreation facilities are familiar stories.

Although the levels of per capita incomes and state and local taxes of the seven states are about two-thirds the national average, both public service and economic expectations of the people are tending toward national standards. Economic growth, including modern transportation and communications, is pushing toward the use of national criteria for wages and salaries and for industrial and commercial operations as well as for governmental services and facilities. The fiscal challenge is pointed up in financing an adequate educational system. Since highways are paid for primarily by user taxes, the financing of education is an outstanding fiscal issue. In 1950 the number of children enrolled in public schools per thousand persons in the productive ages of 20 to 65 years was 394 in seven states in comparison with 277 in the other forty-one states. In terms of children to be cared for and educated, the burden per adult is some 40 per cent higher in the seven states. These states have 17 per cent of the Nation's children but only 10 per cent of the Nation's income. Faced with this situation, the seven states must find ways both to educate a rapidly expanding school population and, if possible, to improve educational services relative to national standards.

Federal-state sharing of fiscal responsibilities is of special concern to the seven-state area. Although Federal aid and Federal tax levies are not set up as equalization measures, they do provide relative fiscal advantages in this area. In 1953 the seven states contributed about 8 per cent of Federal taxes and received 15 per cent of the total grant payments.<sup>23</sup> The extent to which state services should conform to the level of state income and taxes and the extent to which such services should be equalized nationally by Federal assistance are long-range policy issues. Certainly as pointed out by the Commission on Intergovernmental Relations, Federal, state, and local governments need to work together not as competitors but as partners to meet the growing needs for public services. The real problem is one of providing public services rather than the financing of particular units of government.

The rising levels of income and production provide added tax resources and create confidence in the capacity of state and local government to handle the fiscal problems which arise. If economic stability is maintained nationally, one of the greatest hazards to state and local financing in the past will be eliminated. But only by persistent effort can the public services essential to economic growth and modern living be provided in the Tennessee Valley in the face of the twin obstacles of low per capita incomes and low per capita tax revenues.

<sup>23</sup> *The Commission on Intergovernmental Relations, a Report to the President for Transmittal to the Congress, June 1955, Appendix Tables 8 and 9, pp. 309-310.*

## COMMUNICATIONS

### IN DEFENSE OF "EXTREME APRIORISM"

The stimulating methodological controversy between Professors Machlup and Hutchison proves that there are sometimes *more* than two sides to every question.<sup>1</sup> In many ways, the two are debating at cross-purposes: Professor Hutchison is primarily tilting against the methodological (and political) views of Professor Ludwig von Mises; his most serious charge is that Professor Machlup's entire position is, at bottom, an attempt to cloak the Misesian heresy in the garments of epistemological respectability. Professor Machlup's reply, quite properly, barely mentions Mises; for, in fact, their methodological views are poles apart. (Machlup's position is close to the central "positivist" tradition of economic methodology.) But, in the meanwhile, we find that Professor Mises and "extreme apriorism" go undefended in the debate. Perhaps an extreme apriorist's contribution to this discussion may prove helpful.

First, it should be made clear that neither Professor Machlup nor Professor Hutchison is what Mises calls a *praxeologist*, i.e., neither believes (a) that the fundamental axioms and premises of economics are absolutely true; (b) that the theorems and conclusions deduced by the laws of logic from these postulates are therefore absolutely true; (c) that there is consequently no need for empirical "testing," either of the premises or the conclusions; and (d) that the deduced theorems *could not* be tested even if it were desirable.<sup>2</sup> Both disputants are eager to test economic laws empirically. The crucial difference is that Professor Machlup adheres to the orthodox positivist position that the *assumptions* need not be verified so long as their deduced consequents may be proven true—essentially the position of Professor Milton Friedman—while Professor Hutchison, wary of shaky assumptions, takes the more empirical—or institutionalist—approach that the assumptions had better be verified as well.

Strange as it may seem for an ultra-apriorist, Hutchison's position strikes me as the better of the two. If one must choose between two brands of empiricism, it seems like folly to put one's trust in procedures for testing only *conclusions*

<sup>1</sup> T. W. Hutchison, "Professor Machlup on Verification in Economics," *Southern Economic Journal*, April 1956, pp. 476-83; Fritz Machlup, "Rejoinder to a Reluctant Ultra-Empiricist," *ibid.*, pp. 483-93.

<sup>2</sup> The praxeological tradition, though named only recently, has a long and honored place in the history of economic thought. In the first great methodological controversy in our science, John Stuart Mill was the positivist and Nassau Senior the praxeologist, with J. E. Cairnes wavering between the two positions. Later on, the praxeologic method was further developed by the early Austrians, by Wicksteed, and by Richard Strigl, reaching its full culmination in the works of Ludwig von Mises. Mises' views may be found in *Human Action* (New Haven, 1949), and in his earlier *Grundprobleme der Nationalökonomie*, soon to appear in an English translation. On the similarity between Senior and Mises, see Marian Bowley, *Nassau Senior and Classical Economics* (New York, 1949), Chapter I, especially, pp. 64-65. Lionel Robbins' *Essay on the Nature and Significance of Economic Science* was emphatically praxeologic, although it did not delve into the more complex methodological problems.

by fact. Far better to make sure that the assumptions also are correct. Here I must salute Professor Hutchison's charge that the positivists rest their case on misleading analogies from the epistemology of physics. This is precisely the nub of the issue. All the positivist procedures are based on the physical sciences.<sup>3</sup> It is physics that knows or can know its "facts" and can test its conclusions against these facts, while being completely ignorant of its ultimate assumptions. In the sciences of human action, on the other hand, it is impossible to test conclusions. There is no laboratory where facts can be isolated and controlled; the "facts" of human history are complex ones, resultants of many causes. These causes can only be isolated by theory, theory that is necessarily *a priori* to these historical (including statistical) facts. Of course, Professor Hutchison would not go this far in rejecting empirical testing of theorems; but, being commendably skeptical of the possibilities of testing (though not of its desirability), he insists that the assumptions be verified as well.

In physics, the ultimate assumptions cannot be verified directly, because we know nothing directly of the explanatory laws or causal factors. Hence the good sense of not attempting to do so, of using false assumptions such as the absence of friction, etc. But false assumptions are the reverse of appropriate in economics. For human action is not like physics; here, the ultimate assumptions are the clearly known, and it is precisely from these given axioms that the *corpus* of economic science is deduced. False or dubious assumptions in economics wreak havoc, while often proving useful in physics.<sup>4</sup>

Hence, Professor Hutchison is correct in wishing to establish the assumptions themselves. But these premises do not have to be (indeed, cannot be) verified by appeal to statistical fact. They are established, in praxeology, on a far more certain and permanent basis as definitely true. How, then, are these postulates obtained? Actually, despite the "extreme *a priori*" label, praxeology contains one Fundamental Axiom—the axiom of *action*—which may be called a *priori*, and a few subsidiary postulates which are actually empirical. Incredible as it may seem to those versed in the positivist tradition, from this tiny handful of premises the whole of economics is deduced—and deduced as absolutely true. Setting aside the Fundamental Axiom for a moment, the empirical postulates

<sup>3</sup> On the differences between the methodologies of praxeology and physics, see Murray N. Rothbard, "Toward a Reconstruction of Utility and Welfare Economics," in M. Sennholz, ed., *On Freedom and Free Enterprise, Essays in Honor of Ludwig von Mises* (Princeton, 1956), pp. 226 ff.

<sup>4</sup> This holds also for Professor Machlup's "heuristic principles" which are allegedly "empirically meaningful" without being verifiable as true.

I do not wish to deny that false assumptions are useful in economic theory, but only when they are used as *auxiliary constructs*, not as premises from which empirical theories can be deduced. The most important such construct is the *evenly-rotating economy*, or "equilibrium". It is not intended that this state be considered as *real*, either actual or potential. On the contrary, the empirically *impossible* ERE is constructed precisely in order to analyze theoretically a state of no-change. Only by analyzing a fictive changeless state can we arrive at a proper analysis of the changing real economic world. However, this is not a "false" assumption in the sense used by the positivists, because it is an absolutely true theory of a changeless state, if such a state could exist.



are: (a) small in number, and (b) so broadly based as to be hardly "empirical" in the empiricist sense of the term. To put it differently, they are so generally true as to be *self-evident*, as to be seen by all to be obviously true once they are stated, and hence they are not in practice empirically falsifiable and therefore not "operationally meaningful." What are these propositions? We may consider them in decreasing order of their generality: (1) the most fundamental—*variety* of resources, both natural and human. From this follows directly the division of labor, the market, etc. (2) less important, that *leisure is a consumer good*. These are actually the only postulates needed. Two other postulates simply introduce limiting subdivisions into the analysis. Thus, economics can deductively elaborate from the Fundamental Axiom and Postulates (1) and (2) (actually, only Postulate 1 is necessary) an analysis of Crusoe economics, of barter, and of a monetary economy. All these elaborated laws are absolutely true. They are only *applicable* in concrete cases, however, where the particular limiting conditions apply. There is nothing, of course, remarkable about this; we can enunciate as a law that an apple, when unsupported, will drop to the ground. But the law is applicable only in those cases where an apple is actually dropped. Thus, the economics of Crusoe, of barter, and of a monetary economy are applicable when these conditions obtain. It is the task of the historian, or "applied economist," to decide which conditions apply in the specific situations to be analyzed. It is obvious that making these particular identifications is simplicity itself.

When we analyze the economics of indirect exchange, therefore, we make the simple and obvious limiting condition (Postulate 3) that indirect exchanges are being made. It should be clear that by making this simple identification we are not "testing the theory"; we are simply choosing that theory which applies to the reality we wish to explain.

The fourth—and by far the least fundamental—postulate for a theory of the market is the one which Professors Hutchison and Machlup consider crucial—that firms always aim at maximization of their money profits. As will become clearer when I treat the Fundamental Axiom below, this assumption is by no means a necessary part of economic theory. From our Axiom is derived this absolute truth: that every firm aims always at maximizing its *psychic* profit. This may or may not involve maximizing its *money* profit. Often it may not, and no praxeologist would deny this fact. When an entrepreneur deliberately accepts lower money profits in order to give a good job to a ne'er-do-well nephew, the praxeologist is not confounded. The entrepreneur simply has chosen to take a certain cut in monetary profit in order to satisfy his consumption-satisfaction of seeing his nephew well provided. The assumption that firms aim at maximizing their *money* profits is simply a convenience of analysis; it permits the elaboration of a framework of *catallactics* (economics of the market) which could not otherwise be developed. The praxeologist always has in mind the proviso that where this subsidiary postulate does *not* apply—as in the case of the ne'er-do-well nephew—his deduced theories will not be applicable. He

simply believes that enough entrepreneurs follow monetary aims enough of the time to make his theory highly useful in explaining the real market.<sup>5</sup>

We turn now to the Fundamental Axiom (the nub of praxeology): *the existence of human action*. From this absolutely true axiom can be spun almost the whole fabric of economic theory. Some of the *immediate* logical implications that flow from this premise are: the means-ends relationship, the time-structure of production, time-preference, the law of diminishing marginal utility, the law of optimum returns, etc. It is this crucial axiom that separates praxeology from the other methodological viewpoints—and it is this axiom that supplies the critical “*a priori*” element in economics.

First, it must be emphasized that whatever role “rationality” may play in Professor Machlup’s theory, it plays no role whatever for Professor Mises. Hutchison charges that Mises claims “all economic action was (or must be) ‘rational.’”<sup>6</sup> This is flatly incorrect. Mises assumes nothing whatever about the rationality of human action (in fact, Mises does not use the concept at all). He assumes nothing about the wisdom of man’s ends or about the correctness of his means. He “assumes” only that men *act*, i.e., that they have *some* ends, and use *some* means to try to attain them. This is Mises’ Fundamental Axiom, and it is this axiom that gives the whole praxeological structure of economic theory built upon it its absolute and apodictic certainty.

Now the crucial question arises: how have we obtained the truth of this axiom? Is our knowledge *a priori* or empirical, “synthetic” or “analytic”? In a sense, such questions are a waste of time, because the all-important fact is that the axiom is self-evidently true, self-evident to a far greater and broader extent than the other postulates. For this Axiom is true for all human beings, everywhere, at any time, and could not even *conceivably* be violated. In short, we may conceive of a world where resources are *not* varied, but not of one where human beings exist but do not act. We have seen that the other postulates, while “empirical,” are so obvious and acceptable that they can hardly be called “falsifiable” in the usual empiricist sense. How much more is this true of the Axiom, which is not even conceivably falsifiable!

Positivists of all shades boggle at self-evident propositions. And yet, what is the vaunted “evidence” of the empiricists but the bringing of a hitherto obscure proposition into *evident* view? But some propositions need only to be stated to become at once evident to the self, and the action axiom is just such a proposition.

Whether we consider the Action Axiom “*a priori*” or “empirical” depends on

<sup>5</sup> I do not mean to endorse here the recent strictures that have been made against the monetary-profit maximization assumption—most of which ignore *long-run* as opposed to short-run maximization.

The curious idea that failure to pursue monetary goals is “irrational,” or refutes economics, is similar to the old notion that consumers were being irrational, or “uneconomic,” when they preferred to pay higher prices in stores nearer to them, or with a more congenial atmosphere.

<sup>6</sup> Hutchison, *loc. cit.*, p. 483.

our ultimate philosophical position. Professor Mises, in the neo-Kantian tradition, considers this axiom a *law of thought* and therefore a categorical truth *a priori* to all experience. My own epistemological position rests on Aristotle and St. Thomas rather than Kant, and hence I would interpret the proposition differently. I would consider the axiom a *law of reality* rather than a law of thought, and hence "empirical" rather than "*a priori*." But it should be obvious that this type of "empiricism" is so out of step with modern empiricism that I may just as well continue to call it *a priori* for present purposes. For (1) it is a law of reality that is not conceivably falsifiable, and yet is empirically meaningful and true; (2) it rests on universal *inner* experience, and not simply on external experience, i.e., its evidence is *reflective* rather than physical<sup>7</sup>; and (3) it is clearly *a priori* to complex historical events.<sup>8</sup>

The epistemological pigeon-holing of self-evident propositions has always been a knotty problem. Thus, two such accomplished Thomists as Father Toohey and Father Copleston, while resting on the same philosophical position, differ on whether self-evident propositions should be classified as "*a posteriori*" or "*a priori*," since they define the two categories differently.<sup>9</sup>

From the Fundamental Axiom is derived the truth that everyone tries always to maximize his utility. Contrary to Professor Hutchison, this law is *not* a disguised definition—that they maximize what they maximize. It is true that *utility* has no concrete content, because economics is concerned not with the *content* of a man's ends, but with the fact that he *has* ends. And this fact, being deduced directly from the Action Axiom, is absolutely true.<sup>10</sup>

<sup>7</sup> See Professor Knight's critique of Hutchison's *Significance and Basic Postulates of Economic Theory*. Frank H. Knight, "What is Truth in Economics?," *Journal of Political Economy*, February 1940, pp. 1-32.

<sup>8</sup> Professor Hutchison may have had me in mind when he says that in recent years followers of Professor Mises try to defend him by saying he really meant "empirical" when saying "*a priori*." Thus, see my "Praxeology, Reply to Mr. Schuller," *American Economic Review*, December 1951, pp. 943-944. What I meant is that Mises' fundamental axiom may be called "*a priori*" or "empirical" according to one's philosophical position, but is in any case *a priori* for the practical purposes of economic methodology.

<sup>9</sup> Thus, Copleston calls self-evident principles "*synthetic propositions a priori*" (though not in the Kantian sense)—synthetic as conveying information about reality not contained logically in previous premises; and *a priori* as being necessary and universal. Toohey virtually obliterates the distinctions and terms self-evident propositions synthetic—*a posteriori*, because, while being necessary and universal, they are derived from experience. See F. C. Copleston, S. J., *Aquinas* (London: Penguin Books, 1955), pp. 28 and 19-41; John J. Toohey, S. J., *Notes on Epistemology* (Washington: Georgetown University, 1952), pp. 46-55. All this raises the question of the usefulness of the whole "analytic-synthetic" dichotomy, despite the prominence implicitly given it in Hutchison's *Significance and Basic Postulates of Economic Theory*. For a refreshing skepticism on its validity, and for a critique of its typical use to dispose of difficult-to-refute theories as either disguised definitions or debatable hypotheses, see Hao Wong, "Notes on the Analytic-Synthetic Distinction," *Theoria*, XXI (parts 2-3, 1955), pp. 158ff.

<sup>10</sup> See Hutchison, *loc. cit.*, p. 480. Alan Sweezy fell into the same error when he charged that Irving Fisher's dictum: "each individual acts as he desires," since not meant as a testable proposition in psychology, must reduce to the empty "each individual acts as he acts."

We come finally to Mises' ultimate heresy in the eyes of Professor Hutchison: his alleged logical deduction of "wholesale political conclusions" from the axioms of economic science. Such a charge is completely fallacious, particularly if we realize that Professor Mises is an uncompromising champion of *Wertfreiheit* not only in economics, but also for all the sciences. Even a careful reading of Hutchison's selected quotations from Mises will reveal no such illegitimate deductions.<sup>11</sup> Indeed, Mises' economics is unrivalled for its avoidance of unanalyzed *ad hoc* value judgments, slipped into the *corpus* of economic analysis.

Dean Rappard has posed the question: how can Mises be at the same time a champion of *Wertfreiheit* in economics and of *laissez-faire* liberalism, a "dilemma" which leads Professor Hutchison to accuse Mises of making political deductions from economic theory?<sup>12</sup> The following passages from Mises give the clue to this puzzle:

Liberalism is a political doctrine . . . . As a political doctrine liberalism (in contrast to economic science) is not neutral with regard to values and ultimate ends sought by action. It assumes that all men or at least the majority of people are intent upon attaining certain goals. It gives them information about the means suitable to the realization of their plans. The champions of liberal doctrines are fully aware of the fact that their teachings are valid only for people who are committed to their valuational principles. While praxeology, and therefore economics too, uses the terms happiness and removal of uneasiness in a purely formal sense, liberalism attaches to them a concrete meaning. It presupposes that people prefer life to death, health to sickness . . . abundance to poverty. It teaches men how to act in accordance with these valuations.<sup>13</sup>

Economic science, in short, establishes existential laws, of the type: if A, then B. Mises demonstrates that this science asserts that *laissez-faire* policy leads to peace and higher standards of living for all, while statism leads to conflict and lower living standards. Then, Mises as a citizen chooses *laissez-faire* liberalism because he is interested in achieving these ends. The only sense in which Mises considers liberalism as "scientific" is to the extent that people unite on the goal of abundance and mutual benefit. Perhaps Mises is overly sanguine in judging the extent of such unity, but he never links the valuational and the scientific: when he says that price control is "bad" he means bad not from his point of view as an economist, but from the point of view of those in society who desire abundance. Those who choose contrasting goals—who favor price controls, for example, as a route to bureaucratic power over their fellow men, or who, through envy, judge social equality as more worthwhile than gen-

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On the contrary, the dictum is deducible directly from the Action Axiom, and is therefore both empirically meaningful and apodictically true. See Rothbard, "Toward a Reconstruction of Utility and Welfare Economics," *loc. cit.*, pp. 225-23.

<sup>11</sup> Thus: "Liberalism starts from the pure sciences of political economy and sociology which within their systems make no valuations and say nothing about what ought to be or what is good or bad, but only ascertain what is and how it is." Quoted by Hutchison, *loc. cit.*, p. 483n.

<sup>12</sup> William E. Rappard, "On Reading von Mises," in Sennholz, *loc. cit.*, pp. 17-33.

<sup>13</sup> Mises, *Human Action*, *op. cit.*, pp. 153-54. Also see *ibid.*, pp. 879-81.

eral abundance or liberty—would certainly not accept liberalism, and Mises would certainly never say that economic science proves them wrong. He never goes beyond saying that economics furnishes men with the knowledge of the consequences of various political actions; and that it is the citizen's province, knowing these consequences, to choose his political course.

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MURRAY N. ROTHBARD

### *THE COEFFICIENT OF LOCALIZATION: AN APPRAISAL*

A favorite intellectual activity is index-making. To reduce complex phenomena to simple numerical measures is an intriguing challenge, not unlike that of concocting panaceas or building Utopias. The ever-present danger of oversimplification, common to all such pursuits, only adds spice to the game and, while the goal may seldom be reached, the insights gained along the way often provide sufficient justification in themselves. And so, quite naturally, attempts have been made to quantify industry locational patterns and express them concisely in index form; and, quite normally, these efforts, while fruitful, have been less than wholly successful. The limited purpose here is to probe for the weaknesses in two contemporary locational indices in the hope of promoting a more sophisticated application and interpretation of them. Beyond this, the way may be shown to (or, at least, cleared for) substantive improvements.

The development of more powerful locational indices, or even a better understanding of existing indices, is almost certain to facilitate progress in the field of "spatial economics." Are "underdeveloped areas" underdeveloped because they do different work or because they do the same work less well? Are business fluctuations aggravated or mitigated if the more sensitive industries (earliest to respond, most unstable) are spatially concentrated? Are the more rapidly-growing industries centralizing or decentralizing? These questions demand empirical analysis and this in turn hinges on careful spatial quantification or, in a general way, on incisive locational indices and other such numerical devices.

#### I

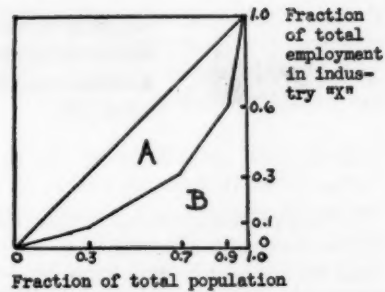
The shortcomings of existing industry locational indices can be largely attributed to the strange absence of any extended discussion of precisely what spatial characteristics are to be measured. With what is to be measured only implicit, current locational tools and concepts are necessarily weak and ambiguous.

Basically, the description of an industry locational pattern may be resolved into three distinct criteria: the number, relative position and absolute position of its constituent establishments. The third criterion, absolute position, by its very nature, demands expression in cartographic form. But the index sought should reflect, at least, the remaining two pattern characteristics: locational frequency and "spacing." The difficulties inherent in any attempt to express simultaneously, both quantitative and positional pattern characteristics will become



Region	Employment in industry "x"	Population	Per cent of population
1.	1	300	0.33
2.	2	400	0.50
3.	3	200	1.50
4.	4	100	4.00

$$\text{Coefficient of Localization} = \frac{A}{A+B} = \frac{.235}{.500} = .470$$



all too apparent in the course of a critical analysis of the two leading locational indices, Edgar M. Hoover's and P. Sargent Florence's respective *Coefficients of Localization*.<sup>1</sup>

## II

Hoover borrowed the *Lorenz Curve*, commonly employed as a measure of income inequality, to portray, graphically, and to measure, numerically, inequality in the spatial distribution of an industry relative to the spatial distribution of population. Using local employment in a particular industry as a per cent of local population as a measure of the degree to which that region specializes in the given industry, he simultaneously and cumulatively summed employment in the given industry and population, region by region, proceeding from lesser to greater degrees of regional specialization. Graphically, employment in the given industry is cumulatively summed vertically and population horizontally, yielding an "industry line," analogous to the line of inequality in the Lorenz graph, as shown in the accompanying exhibit. A graphic impression of the locational inequality of an industrial activity relative to population can be gained by visually comparing the relevant industry line to the 45° diagonal line, which represents perfect equality in the spatial distribution of the industry relative to population, and to the right angle, which represents perfect inequality. Hoover then derived a Coefficient of Localization of the industry in question by dividing the area between the 45° diagonal line and the industry line by the total area of the right triangle. His Coefficient, ranging from 0 to 1, may be regarded as the fraction of perfect locational *inequality*, relative to population, which the industry has attained.

Florence's Coefficient of Localization, much the simpler to calculate, is found by subtracting each locality's share of total national employment from its share of the total employment in a given industry and summing the plus (or minus) deviations

<sup>1</sup> Edgar M. Hoover, "The Measurement of Industrial Localization," *The Review of Economic Statistics*, November 1936, XVIII, pp. 162-71.

P. Sargent Florence, *Investment, Location, and Size of Plant* (Cambridge University Press, 1948), pp. 34-35 and *The Logic of British and American Industry* (Chapel Hill: University of North Carolina Press, 1953), pp. 37-38.

$$\left( \frac{e_i}{E_i} - \frac{e_i}{E_i} \right)$$

Where  $e_i$  is local industry employment;  $E_i$  is national industry employment;  $e_i$  is local total employment; and  $E_i$  is national total employment. To avoid double counting, we agree that

$$\frac{e_i}{E_i} - \frac{e_i}{E_i} > 0.$$

Florence's Coefficient also ranges from 0 to 1, "0 denoting no regional deviation of the particular industry from the regional pattern of industry in general and thus no localization."<sup>2</sup> A value approaching 1 (an asymptotic limit in both Coefficients) indicating extreme "localization" (areal concentration).

### III

What has not been explicitly recognized is that both indices are implicitly population weighted. In the Hoover Coefficient the weighting is reflected geometrically by according to each region a linear distance along the horizontal axis proportionate to its population. The Florence Coefficient is similarly population weighted because the limiting size of a plus or minus deviation of a region is proportionate to the population (more accurately, total employment) of the region.

An alternative would be to weight each region equally. For contrast, let this be dubbed "areal weighting," although, technically, it is areal weighting only to the extent that the regions are of equal area. One method of eliminating the population weighting is to relate, region by region, local employment in a given industry to local total employment, instead of total industry employment. The effect of this operation is to deflate each local industry employment by the total employment of its region. These separate regional ratios or per centums may then be subjected to some appropriate measure of relative dispersion, such as the *coefficient of variation*. The newly-devised *Coefficient of Spatial Variation* is defined as the *standard deviation* of the ratios of local industry employment to local total employment as a percentage of their *arithmetic mean*.<sup>3</sup>

Should a region with ten times the population of another region be weighted equally with or ten-fold that of the latter? If, in a certain land area, a few densely-populated counties comprise a large fraction of the total population; but only a small fraction of the total area; and if these densely-populated counties have similar, slightly-higher-than-average proportions of their total employment engaged in a particular industrial activity; a population-weighted index, such as either Hoover's or Florence's Coefficient, would indicate "non-localization" of the industry; even though the majority of the counties have

<sup>2</sup> Florence, *The Logic of British and American Industry*, p. 38.

<sup>3</sup> The Coefficient of Spatial Variation =  $\frac{\sigma}{\bar{X}}$ ; where  $\sigma = \sqrt{\frac{\sum(X - \bar{X})^2}{N}}$  and  $\bar{X} = \frac{\sum X}{N}$ ;

where  $X = \frac{e_i}{e_i}$  and  $N$  = the number of observations (regions).

little or no employment in this industry. Obviously, while this industry may be highly dispersed relative to population, it is also highly "localized" spatially, especially if the densely-populated counties are spatially concentrated (e.g., contiguous). The use of the area-weighted Coefficient of Spatial Variation would reverse these findings.

The proper choice of weighting depends on the application. The principal value of a locational index number is for predictive purposes. If the analyst is trying to estimate the most probable industry spatial pattern to be found in a given geographical area, the area-weighted Coefficient of Spatial Variation would be preferred. If the purpose at hand, however, is to estimate the most probable industry spatial pattern facing a given person (as producer, consumer, laborer, etc.), the population-weighted Coefficient of Localization would be preferred. In short, the choice between an area-weighted and a population-weighted index hinges on which is pertinent: a measure of the extent to which an industry locational pattern *typically occurs* in space or, instead, is *typically experienced* by an individual.

## IV

For completeness, our comparison may be extended to include another variant of the locational index, "areal orientation." Areal orientation is accomplished for the Hoover Coefficient by reconstructing the Lorenz Curve so that industry employment is summed simultaneously with land area, that is, land area replaces population on the horizontal axis. The Florence Coefficient can likewise be transformed into an area-weighted form by subtracting each region's share of total land area from its share of total industry employment and then summing the plus (or minus) deviations. Reformulated, the Florence Coefficient is:

Where  $a$  is local land area and  $A$  is total land area. To avoid double counting, we agree that

$$\left( \frac{e_i}{E_i} - \frac{a}{A} \right)$$

$$\frac{e_i}{E_i} - \frac{a}{A} > 0.$$

While these alternate formulations of the Hoover and Florence Coefficients are also area-weighted locational indices, they are not equivalent to the area-weighted Coefficient of Spatial Variation. The latter index, while area-weighted, was drawn from data which related regional industry employment to regional population; the former indices, in their revised form, are derived from *absolute* employment data and are thereby divorced from any reference to population whatsoever. (The original Coefficients of Localization and the Coefficient of Spatial Variation all attain values of zero when each region has the same *per cent* of its total employment engaged in the given industry; the revised, area-dominated Coefficients of Localization equal zero when *absolute* employment in the given industry is everywhere the same.)

The Coefficient of Spatial Variation can be transformed into an area-oriented form by substituting absolute employment data for the previously-specified employment per centums. While the range of values is quite different, the area-

oriented Coefficient of Spatial Variation behaves in a fashion similar to the other two area-oriented indices.

The usefulness of an area-oriented index is less obvious. If this index is applied to industrial activities which are significantly influenced by the spatial pattern of population (e.g., bakeries), the resulting index value inextricably combines the spatial pattern of industry relative to population with the spatial pattern of population relative to area, the resultant of the two being the spatial pattern of industry relative to area. Generally, no useful purpose is served here. There are, however, economic activities whose locational patterns are largely independent of the population pattern, ranging from the purer cases of weather observation stations and gold mines to the less clear-cut cases of various agricultural pursuits. Granting its application in the "extractive" industries and close-associated manufacturing (e.g., food canning), this index form may prove, ultimately, to be most valuable in rationalizing the spatial pattern of population itself.

The most critical consideration of all in the interpretation of any locational index is the degree of areal subdivision to which it refers. If any one of our Coefficients is applied successively at, say, the county, state and the Census-defined "national division" levels of areal subdivision, the results will appear, at first blush, to be contradictory. For instance, at the county level of areal subdivision, an industry with many small plants located in a couple of dozen counties along the Atlantic Coast will exhibit a lower Coefficient of Localization, that is, lesser "localization" than characterizes an industry which is carried on entirely in New York, Chicago, San Francisco and New Orleans. Conversely, at the national-division level of areal subdivision, the Atlantic Coast activity will exhibit the higher Coefficient, that is, display the greater "localization."

This seeming paradox is easily resolved. At the finer levels of areal subdivision (smaller regions), these indices largely reflect the sheer number of separate plant locations, with little reference to their relative spatial position. As the region of reference and comparison is progressively enlarged, the Coefficients of all industries will decrease. This is hardly surprising, as enlargement of the typical region is a process of aggregating and averaging. It is not, however, the common decrease in the Coefficients which is significant but, rather, the rate of decrease of one industry relative to another. If an industry Coefficient decreases rapidly with enlargement of the region, it is due to the fact that the industry is so located that areas of high and low specialization are contiguous and, therefore, the "averaging out" of areal differences in industrial specialization proceeds rapidly. In essence, then, a rapid diminution in value of the Coefficient, under progressive enlargement of the typical region, indicates industrial "scatter" and the reverse indicates "cluster," irrespective of the number of plant locations. Thus, the basic conditions for a spatially-homogeneous industry locational pattern, if both the number and spacing of plants are considered, are both a low Coefficient of Localization (or Coefficient of Spatial Variation) at a

fine level of areal subdivision and a rapid diminution in the Coefficient at successively coarser levels of areal subdivision.

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WILBUR R. THOMPSON

### VALUE JUDGMENTS IN ECONOMICS: A REJOINDER

Professor Martin's comments,<sup>1</sup> as I interpret them, do not constitute a basic critique of my presentation of the policy-positivist conflict.<sup>2</sup> It was my basic intention, of course, merely to outline objectively the two philosophies as currently conceived without taking sides. Mr. Martin now raises the further question as to whether or not the present position of economic positivism is internally consistent. Thus I find myself in the somewhat awkward position of being asked to defend one of the viewpoints which I merely intended to survey in my article. Although I am not at all sure I would accept without reservations and modifications the positivist position in the admittedly extreme form (p. 146) outlined in my article, let me for the sake of argument don the cloak of the purebred positivist and—references in hand—defend the hallowed ground.

The positivist position, as I have sketched it, appears to be objectionable to Mr. Martin on two grounds: (1) He questions the ability of economists to construct (statistical) models, i.e., select relevant data and/or characteristics concerning the data of a given inquiry, without "building in" values. (2) And, of greater importance, he suggests that the statistical procedures involved in the act of testing the empirical accuracy or reliability of economic hypotheses implicitly embody value judgments.

The first criticism seems to be an old anti-positivist argument in a new garb. How would the positivist meet this criticism? I am reasonably sure that my article (pp. 149-50) accurately reflects the positivist position on this point: The question of what variables are relevant in model building is ultimately a factual one but in practice the prescientific factors of hunch and intuition play a significant role. Such *pre- or extrascientific* efforts are a necessary and obvious preamble to most lines of scientific inquiry. Observation and empirical testing along with an awareness of the accuracy and usefulness of the model as a predictive device will aid the inquirer in determining whether or not he has included all the relevant variables in his model. In its crudest form such a trial-and-error procedure facilitates the distinguishing of the relevant from the irrelevant. The fact that the economist must often arbitrarily draw the line between what is relevant and what is not is a practical problem faced by all scientists which, as such, poses no logical difficulty for the positivist.

The second criticism is more novel than the first and thus more challenging to the positivist. Therefore, it merits more detailed comment. How might the positivist react to this criticism? The fundamental shortcoming in Mr. Martin's thesis, as the positivist might view it, comes with his admission that the whole

<sup>1</sup> David D. Martin, "Value Judgments in Economics: A Comment," *Southern Economic Journal*, October 1956, XXIII, pp. 183-187.

<sup>2</sup> Mr. Martin's introductory and concluding statements seem to confirm this supposition.



question of whether or not to accept a given, statistically tested hypothesis rests upon the unavailability of complete information. "The element of judgment cannot be removed, however, without complete information." Hence, the door is open for the positivist to contend that the problem of accepting or rejecting a given hypothesis on the basis of its statistically determined reliability is simply one of several *practical* shortcomings involved in applying his philosophy of science. In brief, it is not clear that the economic positivist would recognize the problem posed as being a logical contradiction in his philosophy.

But this might be interpreted as dodging the issue: the decision to accept or reject a hypothesis (given its statistical reliability) must be rendered. Exactly what type of judgment is involved? I feel that the positivist is at least partially justified in arguing that there is a difference between the process of setting a standard for statistical reliability and the ethical—moral connotations which might be precipitated by the acceptance or rejection of any given hypothesis in actually dealing with some particular (social) problem. For example, the positivist might take the position that it is one thing to decide upon criteria for gauging the reliability of some measure of the destruction rendered by an atomic explosion; it is quite a different matter to explore (evaluate) the moral-ethical connotations of dropping such a bomb! Is there a logical link between the two types of evaluation? The former attempts (within the *practical* limitations of statistical analysis) to describe the *factual* accuracy or, conversely, limitations of the collected data; the latter involves the assumption of moral-ethical responsibility for the policy decisions based upon the acceptance or rejection of the given facts. Establishing a selective or screening device (albeit arbitrary) is one thing; the making of ethical-motivational evaluations is another. In brief, do not Mr. Rudner and Mr. Martin tacitly assign the dual role of scientist and policymaker to the economist? If so, their critique is no longer wholly applicable to economic positivism because policy decisions are prohibited to the positivist. Might not the positivist simply claim that he has done his job as a *scientist* by attempting statistical verification of a given hypothesis and in stating its reliability, i.e., in expressing (describing) the risks involved in accepting the given hypothesis and hence the generalization of which it is assumedly a part?

These comments imply a more significant issue which, unfortunately, is clearly beyond the scope of the present reply. I am sure that many positivists (and policy economists) would admit that the present positivist-policy dichotomic treatment of the values question leaves much to be desired.<sup>3</sup> It is very doubtful that the question of whether or not economists as scientists can legitimately employ and manipulate values in their analyses should be treated simply as an either-or proposition. I personally feel that there is much to be said for further exploration of the middle ground wherein the practical answer to the problem of embodying or omitting values in the inquiries of social scientists is a function of the types of values involved and the nature of the inquiry itself. In short, a more detailed classification and more systematic treatment of the

<sup>3</sup> This point, incidentally, is clearly supported by Mr. Rudner in his stimulating article.

role of values in the social sciences is long overdue. In the present case, whether or not the acceptance of a given hypothesis (given its reliability) involves a *value* judgment might well be debated by the positivist. Evaluation need not be ethical or moral.

Furthermore, in the practical situation, is not the real problem very often one of comparing the reliability of alternative hypotheses rather than the problem of setting a standard for the accepting or rejecting of a single hypothesis? Is not verification frequently a relative rather than an absolute matter? If this suggestion is at all accurate, then will not the use of consistent standards in comparing reliability lean more in the direction of objectivity than subjectivity?

I am sure that in so brief a space I have been unable to give Mr. Martin's criticisms the intensive treatment which they merit. In any event let me conclude with one last observation: In the final analysis the overall importance of the present methodological skirmish is probably subordinate to the overall objective implied in the establishment of economic laws. That objective, of course, is accurate and meaningful prediction. *If* a law works effectively and accurately as a predictive tool, then the fact that the integral hypotheses do not accurately fit the empirical facts in terms of accepted criteria for statistical reliability becomes a relatively less important matter than the present discussions would imply.<sup>4</sup>

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CAMPBELL R. McCONNELL

<sup>4</sup> See p. 156 of my article and Milton Friedman, *Essays in Positive Economics* (Chicago, Ill.: University of Chicago Press, 1953), pp. 15-23.

## BOOK REVIEWS

*Plant Location in Theory and in Practice: The Economics of Space.* By Melvin L. Greenhut. Chapel Hill, N. C.: University of North Carolina Press, 1956. Pp. ix, 338. \$7.50.

An interesting problem in the history of economic doctrine is why so little attention has been paid to the theory of industrial location and ancillary subjects. This neglect may be traceable to the pre-eminence of English economists who have had less cause than their American and continental colleagues to reflect upon the economic consequences of transportation costs. But we may suspect that it is also rooted in intellectual inertia. The economist's life is much easier when he has only *the* market to analyze. When a transportation cost is posited, complications intrude which cannot be disposed of by the manipulation of conventional cost and revenue curves. It is, for example, difficult to envisage perfect competition where buyers and sellers are separated by a transportation cost. And when the firm sells in more than one market, the convenient notion of a single price must usually be discarded; there can be as many prices as markets.

The assuming away of transportation costs may make the study of economics easier for undergraduates—and, for that matter, graduate students who are too lazy to learn elementary algebra and calculus. But since transportation costs are important in most industries, this simplification involves a heavy sacrifice of relevance in economic theory. Happily, transportation costs hold no terrors for Professor Greenhut.

This fine, albeit highly technical, work is impossible to summarize in a short space and difficult to comment upon. The author aims mainly at setting forth an internally consistent theory of plant location and geographical discrimination on carefully defined assumptions. In the pursuit of this goal he critically surveys the development of location theory and tests his own formulation of the theory against empirical evidence on how plant sites actually are chosen. Thus *Plant Location in Theory and in Practice* more closely approximates a number of essays on related subjects than the systematic exposition of a thesis.

The most indisputably excellent sections of the book are those that survey the literature on industrial location from von Thünen onward. Together they form probably the best introduction to the subject now available to English language readers; and Greenhut takes particular care to describe and evaluate the important German contributions that are not available in translation. His general estimate is that the theory of industrial location has suffered from the tendency of investigators to stress either supply or demand factors—from the failure, that is, to devise a scissors that cuts with both blades. This evaluation is not unfair. But in defense of earlier writers, one may plead that they worked in an exceptionally difficult area of economic theory; and that their colleagues who confined themselves to simpler models were not able to draw a marginal revenue curve until 1928 or thereabouts.

Throughout this book one has the feeling that Greenhut's interests pull him in two directions. On the one hand, he is seeking to fashion a theory of industrial location that is formally correct. On the other hand, he believes that good theory is not enough; that the important thing is to be able to explain how businessmen go about locating plants. While these aims are not incompatible, the desire to pursue them simultaneously causes Greenhut to depreciate unnecessarily the value of location theory as a guide to "reality." Thus he is especially concerned because "in practice" the choice of a particular plant location is usually influenced by the businessman's personal preferences and prejudices; and because this personal factor is assumed away in all theoretical treatments of industrial location.

Why not accept *a priori* the limitations of the model building approach? In so far as economic change is a striving for the least cost factor combination and the most profitable rate and spatial distribution of output, the theory of plant location does illuminate reality. It is irrelevant that some considerable part of economic change is *not* the price and output adjustments that represent movement toward equilibrium. Any competent economist when provided with a few salient facts can explain why and how the textile industry has expanded more rapidly in the deep South than in New England. No economist, however able, can explain why a particular cotton mill was organized in Little Rock in September, 1923 without converting himself into an antiquarian.

As regards Greenhut's exposition of an intricate subject, this reviewer will venture only two criticisms. The first is that his reliance upon geometry disguises the serious limitations of simple marginal analysis in this branch of economic theory. If conventional diagrams are used, one must assume that the firm (a) charges a non-discriminatory f.o.b. price to all buyers regardless of their location or (b) has constant marginal costs. If premise *a* is used, transportation costs are reflected in the demand curve; if premise *b* is chosen, they can be incorporated into the cost curve. But if the firm discriminates among buyers according to location or has marginal costs that are influenced by output, then neither cost nor revenue can be depicted solely as a function of output; and geometry must be abandoned.

In reality, f.o.b. pricing is seldom the policy that maximizes profits; and marginal costs are most unlikely to be constant given the existence of overhead expenses. Maximizing profit in markets separated by transportation costs is a fairly involved process. As a first approximation the firm will try to equate the marginal cost of delivered output with delivered price in each market. This striving will succeed provided that (a) the product is not subject to arbitrage and/or (b) the spread between delivered prices in two different markets is less than the unit cost of transportation between them.

If discrimination cannot be practised successfully, the firm must quote a uniform f.o.b. price to all customers. But the selection of the best f.o.b. is complicated by the fact that the firm now faces a kinked demand curve. (A kink appears whenever the f.o.b. price, plus unit transportation cost, goes high enough to cause some distant markets to disappear entirely.) Hence, the aggre-

gate marginal revenue curve is discontinuous even though the firm faces a smooth demand curve in every market. The profit maximizing price may correspond to an output where marginal cost equals marginal revenue. But then again it may not.

This reviewer's second criticism is that Greenhut accepts the view of Lösch and Weber that, when entry is free in spatial competition, the industry will eventually achieve a profitless equilibrium. Such an equilibrium, however, can prevail only when firms are of less than optimum size. Yet assuming that production is guided by the prospect of profit—and that this prospect can be intelligently assessed and freely pursued—an equilibrium of inefficient producers is a contradiction in terms. The quickest cure is rationalization through combination. A "true" equilibrium will not emerge until the established firms (a) maintain a rate of output sufficient to discourage the entry of new firms and (b) produce this output in the most efficient manner. The residual profit of the spatial monopolist who has cut price low enough to smother potential competition in the nest is best viewed as a variety of economic rent.

Let us, however, close in the major key. The point that most deserves emphasis is that this treatise is a distinguished work in economic theory. One can only hope that the author's erudition and willingness to acknowledge his debts to earlier writers will not cause the casual reader to underestimate the amount of hard work and original thinking that has gone into this book.

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DONALD DEWEY

*The Scope and Method of Political Economy.* By John Neville Keynes. Reprint of 4th ed. New York: Kelley & Millman, 1955. Pp. xiv, 382. \$6.00.

John Neville Keynes died in 1949 at the age of 97. Many of the younger economists know him only as the father of John Maynard, whom he survived by three years. Some may also know of his most famous brainchild, his essay on *The Scope and Method of Political Economy*. But too few are sufficiently well acquainted with this admirable book. Its reprinting as an "economic classic" should add large numbers to that group of economists indebted to it for many insights regarding the methodology of economics.

The first edition appeared in 1890, at the end of the decade of the *Methodenstreit* between Menger and Schmoller. But little of the heat and nothing of the fury of this controversy is in evidence in Keynes' book. He "endeavoured to avoid the tone of a partisan, and . . . sought, in the treatment of disputed questions, to represent both sides without prejudice" (p. vi). In this he has succeeded remarkably well. If he rejects in no uncertain terms the claims of the younger historical school (pp. 314-327), he also criticizes Mill, Senior, and Cairnes, who had insisted on the deductive and abstract nature of economic science, for having tended "to exaggerate the characteristics of their own method" (p. 19). By the avoidance of polemics in his eminently fair and level-headed exposition of the controversial issues, Keynes could overcome the deafness to reason to which the unconciliatory methodological analysis of Menger had provoked the opposition.



Keynes realizes that many economists dislike and discourage the study of methodology. But he regards some attention to it as necessary for all students of economics; a disregard of the "conditions of validity" of various kinds of reasoning is liable to retard the progress of knowledge (p. 4). Incidentally, I have the impression that "methodology" is no longer disliked but has become increasingly popular, especially among the uninformed who believe it means a discussion of techniques of research, or techniques of anything. (Indeed, I have encountered "the methodology of accounting" and similar expressions.) Perhaps methodology would still be rejected if the users of the word knew what it meant and that their only legitimate doubts should be whether it is coextensive with "material logic" or with "philosophy of science." Methodology is the study of the logical principles by which we determine when to accept and when to reject a proposition as a valid part of a body of scientific knowledge. Needless to say, Keynes means it in this sense and he correctly mentions that economists may actually use the same method and yet disagree on methodology (p. 10).

In discussing the scope of our field, Keynes examines the three kinds of topics that commonly pass as political economy: "economic uniformities, economic ideals, and economic precepts." He regards only the first as the task of the "science of political economy." The other two, he proposes, might be put under the headings of "ethics of political economy" and "art of political economy," respectively, though he is sceptical about the latter because such an art would have to be based also on "political and social science" as well as on social philosophy, and thus would "be largely non-economic in character" (p. 83). The separation between positive and "ethical" economics is, according to Keynes, not only possible but imperative. In this connection he examines why positive economics has often been accused of being biased against government intervention. Keynes concludes that the accusers have confused *laissez faire* as an "assumption," or starting point of analysis, with *laissez faire* as "a maxim or rule of conduct" (pp. 67-74).

In his discussion of the differences between descriptive and constructive economics (p. 174) Keynes sides with those who hold that "mere description cannot constitute a science" and "that economics is of necessity a science of cause and effect" (p. 176). The sections on the role of observation and experiment are perhaps the most useful for students not yet well read on the subject; Keynes' illustrations of Mill's canons of induction make rewarding reading for every economist.

As one would expect from a book first published in 1890 and last revised in 1917, the comments on "statics and dynamics" are dated. Yet, in view of the frequent characterization of dynamics as the economics of change, it is refreshing to read Keynes' sound interpretation of statics as a theory of economic changes, though of "particular" rather than "fundamental" (revolutionary or evolutionary) changes (p. 147). The remarks on the "theories of economic growth and progress" will strike a sympathetic chord with some readers, but a dissonant one with others, for Keynes holds that in these problems "the part

played by abstract reasoning is reduced to a minimum, and the economist's dependence upon historical generalization is at a maximum. Theories of economic growth and progress may, indeed, be said to constitute the philosophy of economic history" (p. 283).

In the theories of relative prices and incomes, on the other hand, Keynes sees little scope for empirical research; here "deduction from elementary principles . . . occupies a position of central, though not exclusive, importance" (p. 211). "This is in accordance with the ordinary logical canon, that the greater the number of causes in operation, and the more complicated the mode of their interaction, the less possible it becomes to fulfil the conditions required for valid inductive reasoning" (pp. 204-205). Moreover, even where it is "possible approximately to satisfy the conditions of valid induction, . . . the conclusion so obtained cannot be regarded as more than suggestive and provisional until deductive explanation and verification are forthcoming" (p. 213).

Keynes rejects the anti-mathematical strictures of Mill and Cairnes, and accepts Cournot's view that the "impossibility of obtaining exact numerical premisses" is no reason against "the employment of mathematical methods" (p. 257). To Keynes, "political economy is essentially concerned with quantitative relations, and therefore involves mathematical notions" (p. 253). Indeed, "one of the most important functions of mathematical analysis is to discover determinate relations between quantities whose numerical values are unassignable. Functions, while remaining numerically unknown, may possess known properties; and on the assumption that certain general relations between quantities hold good, it may be possible mathematically to deduce further relations that could otherwise hardly have been determined" (p. 258).

The whole essay, written in a lucid and pleasing style, can be read in little time and "without tears." I believe that teachers in all fields of economics will render a service to their students if they urge them to read this fine little book. The publishers were well advised to include it in their series of reprints, and they deserve not only praise but a good market for it.

*The Johns Hopkins University*

FRITZ MACHLUP

*Memorials of Alfred Marshall.* Edited by A. C. Pigou. New York: Kelley and Milliman, 1956. Pp. ix, 518. \$8.50.

A clause in the last will and testament of Alfred Marshall contained a provision requesting his successor in the Chair of Political Economy at Cambridge to edit, from his manuscripts, "such material as he considers to be of value." The volume edited by Professor A. C. Pigou in fulfillment of this trust greatly enlarges its scope and is so varied in its content that this review must be limited to a very brief outline of the main divisions of the book and a few general impressions of Alfred Marshall and his work which seem worthy of note.

Part I of the *Memorials* consists of a biographical sketch of Marshall and his work by John Maynard Keynes and a series of reminiscences of a rather personal nature by Professors Edgeworth, Fay, Benians, and Pigou. In Part II we find selections from Alfred Marshall's writings, including his addresses, articles and fragmentary notes. The last section of the book is devoted to a chronological

compilation of letters written by Marshall during his life to a large number of people and covering a wide range of subjects, primarily economic in nature.

The biography by Keynes apparently was prepared for this volume as early as 1929 and was used in the *Essays in Biography*, which Keynes published in 1933 and which is familiar to many economists and other readers. Keynes points out the dual nature of Marshall's character, that of moralizer on the one hand, and scientist on the other. Marshall was dominated by the desire to do some practical good and this was a source of mingled strength and weakness in his work. Thus, even though he considered economics to be not a body of concrete truth, but an "engine for the discovery of concrete truth," yet, as Keynes puts it, "he hankered greatly after the concrete truth which he had disclaimed and for the discovery of which he was not specially qualified."

Another interesting point brought out in the biography is that Marshall had worked out in his own mind many of the ideas credited to Jevons and Menger at a time previous to the publications of their writings. These theories, although familiar to students of Marshall at Cambridge, did not appear in print until the *Principles* came out in 1890. Keynes also attributes to Marshall many original and important contributions in the fields of money and foreign trade which were not published until fifty years later. Thus his failure to publish deprived him of a great deal of recognition for many ideas known to Marshall far in advance of others. This failure is attributed to Marshall's painstaking thoroughness, his sensitivity to criticism, fear of being wrong and his preoccupation with other matters.

In reading the addresses, articles and letters, one is impressed by the breadth of Marshall's interest, knowledge and understanding of all phases of economic and social life and by the fact that in many instances, he gives evidence that he was in advance of his time. One finds him speculating in 1887 on the idea of a different standard for deferred payments in terms of purchasing power and advocating periodic publication by the government of index numbers of the general price level. He foresaw the growing trend toward business combinations and the separation of ownership from management and he advocated government regulation but not government management. In his later years we find him stressing the need for quantitative economic analysis as contrasted with the qualitative analysis of the 19th century. In 1907, he warns against what he called "collectivist bureaucratic programs" which he felt would result in disaster. During the early days of World War I, Marshall predicted a second war and expressed fear of its consequences.

Marshall's greatness as a teacher and developer of young economists is evidenced throughout, and in a letter to Keynes, written in 1922, he indicated clearly that he considered this his most important contribution.

University of Arkansas

GEORGE E. HUNSBERGER

*The Meaning and Validity of Economic Theory.* By Leo Rogin. New York: Harper and Brothers, 1956. Pp. xvii, 697. \$6.50.

The late Professor Rogin's goal in his book is to give an answer to meaning and validity of economic theory. A real "meaning" and "validity" can be rec-

ognized only in connection with economic policy, i.e., practical application, say: utilization of the findings of economic theory. In other words, before the issue of the validity of a particular theory can usefully be raised, there has to be discovered the practical objective of the theorist. Besides, even after this objective has been adequately clarified, the problem of the validity of economic theory still remains a difficult one, because theoretical articulation in the light of its practical aim changes with given historical circumstances. There can be no question of a uniquely correct theory (p. xv). There is no objectivity of economic science as there is objectivity of the natural sciences. Scientific method in economics cannot appeal to facts only; facts out of economic life have to be seen in connection with, have to be subordinated to social ideals and social goals. Rogin states that his research into the history of economic thought revealed that significant new orientations in economic theory first emerge in the guise of arguments in the realm of social reforms (p. xiv). The appellation "laws" in economics is nothing else than misleading. It might be advisable to speak of the "art" of economics in the place of the "science" of economics. The economist should not abdicate the functions of social criticism and the direction of economic policy. By raising to self-consciousness the relation of theory to policy, misdirection of energy in the task of theoretical formulation in the social sciences may be decreased.

These are the essentials of Rogin's point of view, and at the same time obviously the measuring rod of his historical approach to economic theory. Rogin's book is brilliantly formulated, but its basic concept is erroneous, at least in reference to the development of economic thought up to the historical school. We cannot measure the former procedures by modern perception and requirements, nor evaluate the theories of the classicists and their followers according to the practical use to which they were put. Their approach to economics was a different one. The prime objective of the Physiocrats and Adam Smith was the analysis of the actually existing society in the light of how it ought to be. Both kinds of theories served an ideal model, and by doing so they were expected to serve the real world. This could not be as long as the "natural state" was not yet accomplished. As a matter of fact, it never has been. Therefore, in those cases we cannot lament about lack of utilization of economic theory. The author should have considered more adequately the trend in economics to reality. The successors of the Quesnays, Smiths, Ricardos started already to see more and more clearly the divergence between thought and fact. They felt the distance between premise, explanation of production, distribution, income, consumption, and how to foster the general welfare with all this insight and knowledge. For this purpose, they introduced two different branches of economics, viz., theoretical economics (science) and economic policy (art), a distinction, well known to European students. The latter was considered "a far more arduous study" (Senior). We can underwrite this in view of the immense informative material we have at our disposal today; in past times empirical data writers were lacking almost entirely. This is another reason why the validity of their theories should not be judged by their accordance with contemporary practical

use. In many instances the theorists simply did not have the opportunity to verify their assumptions by data. Apparently in the course of his work, the author has noticed these and related troubles, for as a whole he actually does not show how "valid" the different schools of economic thought are, at least not in the strict sense he started out with. What the book presents is a history of economic thought in a traditional manner, confined to the European development up to Keynes. Taken as such the record may be of benefit to the reader by stimulating him with a whole range of basic questions: what is the meaning of economics as a science; what economic theory; what economic policy; what constitutes the relationship between theory and policy; is the value judgment supposed to be applied by the politician only, or by the scientist, too. Topics such as these are not new. In fact, they were reason enough for enduring quarrel especially within the German historical school. Should the economist just find, collect, and analyze facts, or furthermore should he conclude upon what the facts ought to be? There has never been a generally agreed answer. Rogin likes to speak of the "art" in the place of the "science" of economics. If this suggestion should be taken as a distinction between science and non-science, Rogin would be wrong. Since the early classicists we visualize "economic theory as a logically coherent system of causal relations" (Myrdal). Economics has the property of a science. Methods of scientific treatment of the material relations between man and his world have become recognized, despite the everlasting question "how far (is) life rational, how far (reduce) its problems to the form of using given means to achieve given ends" (F. H. Knight). The economist has the possibility to subordinate his desire for understanding to his desire for control. He only has to realize then that he is acting as a politician instead of being a "pure" social scientist. The soberness of science requires a distinction between indicative and imperative. In our days both ways of treating economics are located closer to one another than ever before. In the economist's tool chest of today we find devices such as index numbers, correlation techniques, and economic budgets. The unforeseen enormous accumulation and handling of facts out of the real world have brought the economist in intimate cooperation with politicians. "The turbulence of life has driven the economist out of his den and forced him to reckon with the changing economic scene" (A. F. Burns).

The author's complaints about the gap between theory and day-to-day needs are obsolete in many respects. It is true that economic knowledge is still inadequate. The intricate reality is still difficult to catch, the devices are not complete yet, and the instruments may sometimes even be imperfectly conceived. There is still a reliable theory outstanding, a theory which orients itself "to the requirements of contemporary practice." In this point Rogin is right. We may observe, however, successful attempts to realistic thinking and definite knowledge. It may be referred, for instance, to the work of the National Bureau of Economic Research. The book is of scholarly high standing. Mrs. Rogin has rendered her husband a good service by composing his papers to the published volume which furnishes evidence of care and a great sense of responsibility. The hindrances connected with an undertaking such as this have to be considered.



One consequence may be the occasionally apparent deficiency in structure and lucidity. This will make it hard for the book to be used as a text.

Stetson University

JOHN E. BARTHEL

*A Study of Conflict in American Thought, 1865-1901.* By Sidney Fine. Ann Arbor, Mich.: University of Michigan Press, 1956. Pp. x, 468. \$7.50.

A carefully documented, exhaustive analysis of the clash between laissez-faire ideology and its opponents during the last third of the nineteenth century is presented here by Professor Fine of the University of Michigan, himself a believer in the necessity of a general-welfare state under conditions prevailing in an industrial society.

We are reminded of the overwhelming dominance of laissez-faire thinking among important economists during the years 1865-1885, with an exception made for protective tariffs by members of the Carey school. Resistance to the extension of state interference was a civic and patriotic duty, according to William Graham Sumner of Yale. Herbert Spencer, who opposed sanitary regulations on the ground that the death of the ignorant would improve the race, found an appreciative audience on this side of the Atlantic—between 1860 and 1903 over a third of a million copies of his various philosophical writings were sold. Less doctrinaire than such scholars, the American businessman was prepared to use the state to his advantage at the same time that he denounced government intervention. The bench and bar applied the concept of the negative state to strike down state and federal legislation in the last decades of the century, provoking Justice Holmes's famous remark that the Fourteenth Amendment did not enact Spencer's *Social Statics*.

Laissez-faire advocates had to contend with powerful spokesmen on the other side of the question. By no means all clergymen advised the government to keep "Hands off," as did Henry Ward Beecher. The participants in the social-gospel movement included some, like the famous Rev. Washington Gladden, who viewed government as "a great cooperative agency" which could promote the "health, the comfort, the innocent enjoyment, and the prosperity of its citizens" (p. 187). R. T. Ely took the lead among the younger generation of economists who were influenced by what they had seen and heard while pursuing graduate studies in Germany. To the founders of the American Economic Association, the state was "an agency whose positive assistance is one of the indispensable conditions of human progress" (p. 218). Ward, Small and Ross led the sociologists' attack on Spencer; Woodrow Wilson and Willoughby did the same in political science, while William James and John Dewey challenged social Darwinism from the standpoint of psychology and philosophy. The one point on which followers of Henry George, Bellamy admirers, leaders of the movement reflecting agrarian discontent, the national labor movement, and the socialist parties could all agree was the desirability of extending the role of the state, though they certainly differed about the legitimate scope of government intervention. On both local and national levels, as various state labor laws and the I.C.C. Act testify, exceptions to laissez-faire were to be found in

practice, in the '80's and '90's. It remained, however, for the present century to legislate the general-welfare state into existence.

The student of American economic policy will find Fine's lucid, thorough analysis valuable for the historical perspective it affords. A bibliography of over forty pages testifies to the impressive research which went into the making of this erudite volume.

*City College of New York*

BENJAMIN J. KLEBANER

*Public Control of Economic Enterprise.* By Harold Koontz and Richard W. Gable. New York: McGraw-Hill Book Company, 1956. Pp. xii, 851, \$7.00.

The leading contenders for academic favor in the battle of the books in the general area of "government and business" are probably the admirable volumes of Vernon Mund, Clair Wilcox, and the present volume by Koontz and Gable. Although in scope and outline following the pattern of an earlier text by the senior author, the enlarged content and greater maturity of analysis of the new text merit its being given fresh, independent consideration.

The authors divide the text into seven sections of almost equal length beginning with a treatment of the historical development of economic control, its constitutional basis and institutional forms, and ranging through the areas of transport and public utility regulation, control of monopoly and competitive practices, the securities markets, labor, and agriculture, and ending with a survey of general aids to business, government ownership, wartime controls, fiscal and monetary measures for stability, and a final appraisal of the role of government in relation to the enterprise economy. Some will quarrel with the amount and variety of subject matter included, some with its content, some with the nearly equal space allocation to problems of, perhaps, unequal significance, and some with the order of presentation of all this material. Yet, if we are given an "n-volumes-in-one" package, we are at least free to pick and choose, to omit and to rearrange.

In a terrain as broad and diverse as this there are bound to be faults. Although scattered here and there throughout the text, there is no integrated and extended presentation of the rationale of the free market economy which spells out the working of the price mechanism and indicates the optimum social consequences to which it is expected to lead when operating under competitive conditions. One can not assume that the student knows all this from his previous study (he should, but unhappily, he does not) and since a recognition of this rationale, coupled with empirical evidence on the absence of competitive market structures and practices (which is presented in Ch. 13), is the very basis for understanding the need for regulation and control, it can not be passed over quickly with the presumption that it is all self-evident. Moreover there is pedagogical advantage in making the first order of business the problem of maintaining a free market in those non-exceptional industries in which the price mechanism might be the supreme arbiter instead of placing this fundamental problem in a fourth section of the text after delving first into the "exceptional" industries: transportation and public utilities.

With respect to depth of analysis and acuity of insight: there is a neglect of the precise definition of terms, e. g., overhead, joint and common costs, "cut-throat" competition, "natural monopoly"; there is some weakness in the authors' grasp of the significance of industrial concentration, of the meaning of monopoly and competition themselves, of the objections to the big corporation, of the impact of mergers. There is a scarcity of statistical evidence which could aid in an evaluation of the success of control, and the authors eschew all graphic aids to economic analysis. There are omissions: e. g., what of the intractable problem of public policy toward ubiquitous oligopoly?

The authors have done an heroic job of handling a tremendous body of judicial law: they have cleanly cut the meat of decision from the bones of contention and compressed it into rations so concentrated as to require the student to chew hard and long for its proper digestion (Chs. 14, 15, and 16). The coverage of laws, of administrative bodies and their procedures and of judicial decrees is encyclopedic. The text is enhanced by a table of cases, a satisfactory index and very well chosen sets of selected references appended to each chapter as well as by extensive references and documentation throughout.

Perhaps it is inevitable that a book which covers so much will have a goodly share of weak-points; and perhaps it is also inconsistent, when so much material is offered, to ask for more; but this reader would like to have seen a chapter devoted to the processes by which government *becomes* a controller and regulator of economic life. This means, certainly, a minimum survey of the machinery of politics, the methods by which elected officials seek and gain office, the role of the press, the activities of lobbies and an evaluation of the extent to which government is the tool of business rather than its master: the subject of "business control of government." Withal, this is a scholarly work, and, if the government has its laws and the businessmen have their monopolies, the academicians, at least, have their textbooks; this one is commended to the attention of teachers in this field.

*University of Florida*

NORMAN A. MERCER

*Public Finance and Economic Welfare.* By Kenyon E. Poole. New York: Rinehart & Company, 1956. Pp. xvi, 640. \$6.50.

This book is another addition to the growing number of treatises on public finance which attempt to integrate this particular field with the mainstream of economic analysis. Professor Poole's avowed intention is that of focusing on the welfare aspects of public finance. He has meant to give special attention to monetary and fiscal theory, to the impact of public finance on income distribution, and to the placing of the principal issues in their historical setting. The twenty-six chapters are divided into four major sections—Public Finance in the National Economy, Governmental Revenue, Fiscal Policy and Economic Stability, Social Security, Public Debt, and Economic Growth. About one-half of the total space is given to the consideration of revenues and something more than one-fourth to the fiscal policy section.

Given the author's choices as to matters of approach and emphasis, it is the

reviewer's judgment that this volume stands as a thorough and impressive performance. Historical and descriptive material is judiciously and effectively used. The economic effects, equity aspects, and the processes of tax shifting for all major types of taxes are given comprehensive presentation. There is a wealth of theoretical material on fiscal policy as well as a very satisfactory discussion of what Professor Poole aptly calls "the art of fiscal policy." His treatment of budgeting is also worthy of special mention.

Even in a volume as comprehensive as this one, some matters must be slighted. Administrative considerations are given relatively meager attention. The reviewer regrets that more emphasis could not have been placed on the increasing tendencies toward erosion of the base of the federal income tax. The limitation of comment on the depletion allowance granted income from mineral properties to a single footnote seems difficult to justify. The growing necessity of improving the tax structure of state and local governments might well have merited further analysis and comment.

The major reservation of the reviewer with respect to Professor Poole's book concerns its possible usefulness as a text in a basic one-semester course in public finance. The array of material here treated is so formidable that it appears impossible to cover in such a course. For example, the emphasis on monetary matters is, of course, quite appropriate in a thorough consideration of fiscal policy and general economic stability, but the extent of attention here given to monetary policy cannot be followed if the material more strictly relevant to public finance is also given adequate consideration. This reservation is not meant to detract in any sense from the merits of the book. These merits are very substantial indeed, but the author seems to have included so much as to impair the volume's usefulness as a text for courses of the type mentioned above.

University of Texas

CAREY C. THOMPSON

*Social Security and Public Policy.* By Eveline M. Burns. New York: McGraw-Hill Book Company, 1956. Pp. xvi, 291. \$5.50.

In this book, one of the Economics Handbook Series, Mrs. Burns discusses the problems of social security policy. As such the book breaks new ground as a text on social security. Previous books on social security have been organized in a different fashion, either on a program-by-program basis, as was Mrs. Burns' earlier book, *The American Social Security System*, or on a risk-by-risk basis, as was Professor Gagliardo's *American Social Insurance*. The new book centers around public policy. It "attempts to identify the major questions about the nature of social security programs which must be answered by every community—" and "to indicate some of the important considerations which have to be taken into account and evaluated in answering the questions." In these objectives the book succeeds admirably.

The book is divided into four major parts: one concerned with the policy questions relating to benefits, another to the special problems associated with each particular risk, a third devoted to financing problems, and a final section dealing with administrative issues. It should be noted clearly that the book deals

with problems, policies, issues, and with the considerations which bear upon these issues. As such the book will have an element of timelessness—a not unimportant advantage over other social security books which concentrate on the provisions of the various programs and lean heavily on current data concerning these programs. Such books become increasingly obsolete with every session of Congress.

The book is comprehensive in its coverage of policy questions. This is commendable in itself, but it occasionally tends to cause the author to deal with seemingly dead issues as well as live ones. For instance, experience rating in unemployment insurance is dealt with as if there were a real possibility that state legislatures might now back away from it. Short of a major depression this seems quite unlikely. In defense of the author, however, she has rationally examined a very wide range of issues, far more live ones than dead ones, and issues once dead may come back to life again.

Since the book does deal with policy only, the reader will need to come to this book with some knowledge of social security beforehand. It will serve better as a supplement, a very valuable supplement, to a textbook, rather than as a basic textbook itself. Or similarly, the book will serve as an excellent foundation for a second course in social security, after the student has been grounded in social security practices, institutions, and history.

As to format the readability of the book might be improved with a somewhat more liberal use of sub-topic and paragraph headings. There seems to be a tendency to go from one sub-topic to another without warning to the reader. In some cases this makes for several pages of unbroken reading requiring the reader to watch closely for topic changes. Otherwise the presentation is straightforward and clear.

Mrs. Burns has indeed made a valuable contribution to the shelf of important works in social security. This book will be widely used in colleges and universities, and, it is to be hoped, widely read by the general public. And it should be required reading for members of the U. S. Congress, and others of state and federal government concerned with policy formulation.

*Oklahoma Agricultural and Mechanical College*

JOSEPH J. KLOS

*Public Policies Toward Business.* By Clair Wilcox. Homewood, Ill.: Richard D. Irwin, 1955. Pp. xix, 898. \$6.50.

This text, more than others in this field, reflects the personal experiences and value judgments of its author. Since Professor Wilcox's experiences are rich and varied, this is a virtue; since value judgments reached on the basis of experience, however rich, produce less reliable conclusions than those reached through rigorous analysis, this is also a weakness.

Wilcox is especially to be commended on his presentation, going logically through the spectrum of public control: From maintaining competition, through supplementing and moderating competition, then to public regulation, and finally to government ownership. Wilcox's order of presentation ostensibly reflects the order of his preferences: regulation by competition is the most desirable,



government regulation and ownership the least. At times, however, the reader gets the distinct impression he must have started at the wrong end of the book. While huge national unions pose problems, abandoning competition in the sale of labor has probably produced as many good as bad results. Rigid agricultural price supports, which Wilcox is against, impose a cost the American economy can easily afford (Wilcox's conclusion that the Democrats' price support program was actually more flexible than that devised by the Eisenhower Administration will send statisticians, congressmen, and surely Secretary Benson, scamp-ering to the statistical archives of the Department of Agriculture). Repeated actions by local, state and federal governments to shelter small business, while inconsistent with the maintenance of competition, have had a minimal influence on the economy generally. But government should do even more; it should reduce small businesses taxes, furnish them capital, get them government contracts, and provide them with research services. Public action should ease the adjustments and share the costs where a local industry is obviously dying. The conservation laws should pay more attention to conserving natural resources than to conserving the rights of private property. Savings institutions should be more effectively regulated, social security extended on behalf of labor, and the corporation laws reformed. The Federal Communications Commission should surely do something about the low level of advertising—and possibly something about the low quality of programs—on radio and television. In the end Wilcox urges more effective regulation through the maintenance and promotion of competition, but by then competitive regulation seems to have been designed almost exclusively for du Pont and General Motors. In short, I believe that Wilcox's economic policy approximates that advocated by the mid-twentieth century Liberal, at least as liberals understand it.

It is emphasized that these conclusions in policy must be reached principally through impressions left with the reader. Wilcox recognizes that some government activities which aid small business, labor, consumers, agriculture, industries needing subsidies to survive, etc. are desirable; others are undesirable. So it is also with trade association activities, patent law administration, and the rulings of the regulatory agencies. Hence, how Wilcox presents these matters is as revealing as what he presents.

Wilcox is ever aware of the political atmosphere in which the economy must operate, and here he candidly identifies his political heroes. The Democrats are by and large the clean-living pistol-packing purveyors of law, justice and order; the Republicans are the bank robbers. It is important to Wilcox that the Clayton and Federal Trade Commission acts were passed by Democrats over Republican protests, and that Thurman Arnold came during a Democratic administration. It is unimportant to him that the Sherman Act came out of a Republican administration and bears the name of a Republican senator, that President Theodore Roosevelt was a Republican, and that legislation removing fair trade, basic agriculture, labor, and bituminous coal from competitive regulation was the New Deal—these laws, some of which Wilcox laments, were simply "passed by Congress."

The book, then, is something less than a *tour de force* in the economic logic of public policy. It is none the less a welcome addition to an important field of study where good texts are hard to find. Few teachers bring to the subject Wilcox's wealth of experience. This fact alone favorably distinguishes his text from others. Nowhere else is the student likely to find such accurate and intimate discussion of the administrative process, on which hang the successes and failures of policy. The book is also remarkably complete in its coverage, combining the substance of both indirect (antitrust) and direct (public utility) regulation. This reviewer may disagree here and there with some of Wilcox's policy conclusions, but he applauds the author for bringing to bear on all the important issues a remarkable amount of wisdom and firsthand knowledge. These virtues will accord the book a prominent place in the history of thought on the subject long after it has served its usefulness as a text. Few texts claim this distinction.

Princeton University

JESSE W. MARKHAM

*Fairhope, 1894-1954: The Story of a Single Tax Colony.* By Paul E. and Blanche R. Alyea. University, Ala.: University of Alabama Press, 1956. Pp. xiv, 351. \$4.50.

This is an interesting book. It derives its interest from the careful account that is given of a human adventure in a particular way of life. The adventure may not in itself have been worthwhile, but the record of the experience is another chapter in the "greatest study of mankind."

Fairhope, a single tax colony, was organized by about 20 men in Des Moines, Iowa early in 1894. A committee was appointed to select a place for settlement, and it chose Stapelton's Pasture on the east shore of Mobile Bay. November 15, 1894 was set as the round-up date for settlers, and 25 persons, including some half-dozen children were on hand to begin life under the Single Tax. No one of these was rich and some had no money at all and only a few possessions. The colony could buy only "sub-marginal" land and very little of that. Further the acres that were bought were non-contiguous. The initial purchases gave only a rainbow promise of ever yielding enough rent to provide for the community needs of a settlement.

The problems of the colony were many. In addition to the basic difficulty of too little, too poor, and non-contiguous land, the settlers were not familiar with the agricultural and industrial life of the South, and within the colony there were conflicts of personalities and also of philosophies. Particularly, some were socialists and their doctrine was abhorrent to the simon-pure single-taxers. The non-resident members and the resident non-members complicated the problem of control. There was also the difficulty of transportation outlets both by land and water. Further, the residents were "aliens" to their Alabama neighbors in addition to being "queer" because of their policy of land ownership.

Then, too, there was the perennial problem of the amount of rent that each lease holder should pay to the colony, for no one should ever have an "unearned increment." Then there was the problem of the taxes levied by Alabama and its subdivisions on the improvements made by lease-holders, for, according to

the single tax philosophy, the products of toil should never be taxed. Also, the colony was bedeviled by the speculative fever engendered by the Florida land boom in the middle 1920's.

But despite all the difficulties the more zealous souls held the colony together and made it prosper at least sufficiently to put it ahead of adjacent communities. It has survived for sixty years, and that as our authors say, is noteworthy, and makes the experiment worthy of a book. But there are currently signs of decadence.

What did these doughty souls hope to accomplish? Certainly they did not expect to realize the goals envisioned by Henry George in his advocacy of the Single Tax as a national policy. Indeed, George had no interest in the project.

At most, they expected to share equally the economic rent that their land might yield in the future, rather than having it enjoyed by individual families who owned particular lots or tracts, with the risk that some might gain a considerable increment and others none at all.

This meant that the persons most able in the art of making money would not gain as they otherwise would and these presumably were the leaders of the colony. This means, of course, that these men were more interested in a way of life than in economic gain. Apparently they were especially anxious to exercise their gift of leadership. Presumably they had their reward.

Professor and Mrs. Alyea make many pertinent comments concerning the Single Tax philosophy, but they fail to raise any question relative to the shifting and incidence of taxes. This suggests an interesting point in respect to the problem in Fairhope of taxing the produced goods of leaseholders.

Henry George and the Fairhope leaders insisted that each person should get all that he produces and only that, and that a tax on land alone would accomplish this. There is, obviously, implicit here the belief that there are no economic surpluses except on land. In other words, returns equal costs everywhere except on land.

But if there are no surpluses except on land—if returns from all enterprise equals cost (there being no supra marginal producers)—enterprisers would not be advantaged by having their taxes on improvements reduced. Their costs would fall, but so would their selling prices.

This leads to the conclusion that Fairhope need not have been concerned about taxes on improvements, since merchants, for example, in the Colony were tied in market-wise with the adjacent communities, and indeed with the business life of the nation. They could charge as much, but no more, than their competitors. Hence, having their taxes remitted was a windfall to them, and indeed amounted to an increase in the land rent which accrued to their lease-holds. So if their taxes on improvements were remitted, as they have been, the logical procedure would have been to increase the rent they paid to the colony, if the basic Georgian analysis is sound. But to have sharpened the economic analysis would have made George and his followers less earnest propagandists and that would have spoiled the fun.

*Tulane University*

H. GORDON HAYES

*Comparative Economic Development.* By Ralph H. Blodgett and Donald L. Kemmerer. New York: McGraw-Hill Book Company, 1956, Pp. x, 557. \$6.00.

The purpose of this textbook is to instruct college freshmen and sophomores in the economic development of the United States, Great Britain, the Soviet Union, and Germany. Each country is treated separately under parallel chapter headings dealing with population and resources, agriculture, transportation, manufacturing, finance, labor, commerce, and a summary. The final chapter of the book compares the economic orders of the four countries.

Though not as informative and written with less detachment, the general impression of the book is that of a government document for military and foreign representatives assigned abroad. Portions of the book are adequate in an economic historical sense and not uninterestingly presented, for example, most of the parts dealing with Great Britain and Germany. But in the chapters on the U. S. and the U. S. S. R., Professors Blodgett and Kemmerer have found restraint and objectivity particularly difficult. Their discussion of the causes and effects of economic fluctuations in the United States is a dramatic example of this failing. On page 123, they note, "A depression is a tragic and painful economic illness that comes when an economy gets out of balance, but it may serve to purge the economy of weaklings and the extremists whose influence and decisions have caused the depression." These notions when combined with the causes of depressions given earlier (p. 115) tend to cast the unsuccessful entrepreneur in the role of the villain. In any event, they hardly commend the book to instructors wishing to offer a balanced elementary course in economic development and most certainly detract from the material of Part I about which there is general agreement.

In their discussion of the Soviet Union, the authors have on many occasions used unevaluated Soviet sources where better sources are available and have ignored many recent scholarly works. For example, in their discussion of industrial production (p. 311), Soviet industrial production in 1937 as taken from E. Varga is given at about six times the 1928 level. This increase probably refers to large-scale industry although it is not specified. Donald Hodgman in his *Soviet Industrial Production, 1928-1951* (Cambridge: Harvard Univ. Press, 1954) shows the increase to have been less than four times (p. 54). Reference to the recent work of Norman Kaplan of the RAND Corporation and A. Nove of the British Ministry of Trade on investment and Soviet budgets would have added considerably to their discussion of investment (pp. 334-336). The estimates of national income (p. 387) hardly coincide with the estimates by Abram Bergson and Hans Heymann, Jr., in their series on *Soviet National Income and Product* by the Columbia University Press, nor do the rates of change approximate the estimates given by the Joint Economic Committee in *Trends in Economic Growth: A Comparison of Western Powers and the Soviet Bloc* (Washington: Government Printing Office: 1955), p. 57.

The errors and the pronounced bias of this book reflect not only on the authors but also on the approach used, that is, of presenting a story from the view of a single discipline which is best told by spokesmen for the many concerned fields

of inquiry. Whether there is a "latent demand" for a book of this nature remains to be seen. If there is, it is hoped that the next attempt to satisfy it will be truly an interdisciplinary work.

North Carolina State College

CLIFFORD D. CLARK

*Economics of Transport.* By Emery Troxel. New York: Rinehart & Company, 1955. Pp. 837. \$7.50.

In his *Economics of Transport*, Professor Troxel has provided a fresh and highly desirable approach to textbook writing in this field; this book more truly covers the *economics* of transportation than any of its predecessors, despite the past popularity of titles which embrace the word "economics." The main theme is the allocation problem, with policies and relationships explained and tested by marginal analysis. Although placed in the setting of our institutional arrangements, with examples drawn largely from United States experience, the hard core of the analysis is of rather universal application without regard to time or country.

The book deals rather extensively with some matters that commonly have been virtually ignored in general texts, including such aspects as plant layout, spatial design, and scheduling for optimum efficiency. Other important economic concepts are treated more definitively than has been customary, such as the two full chapters on transport demand. The close tie to theory is suggested by the explanation of this demand in terms of marginal net products, a departure from traditional discussions.

The strong theoretical emphasis has occasioned a rather substantial review of economic principles, exemplified by the entire chapter devoted to the general theory of price discrimination. This reiteration of principles is probably all to the good, since most students find theoretical models highly elusive; on the other hand, redoing some of the work of the principles texts limits the amount and effectiveness of the coverage of the specialized aspects of transportation economics.

On the liability side in this reviewer's balance sheet is a failure to deal conclusively and convincingly with some of the pressing problems of transport public policy, such as interagency price competition and the control of entry. Many useful guidelines are established, but these are employed primarily to evaluate the performance of regulatory commissions in terms of present legislation, neglecting the equally significant and perhaps more fundamental task of pointing the direction toward improvements in legislative policy. Perhaps the same principles provide the guidance in both contexts. But the magnitude of issues such as more or less entry and price control warrant their explicit treatment as major policy problems.

Furthermore, some of the policy propositions are either unclear or unconvincing to this reviewer. An example may be drawn from the discussion of entry control, where it is observed that "Allowing a second or other additional firm to enter an area simply because its average or marginal costs are below those of an existent firm, a regulator neglects the total-revenue and net-revenue effects



on the present firm that follows from the entrance. He can create an earnings prospect of  $TR < TC$  for an existing firm" (p. 396). Should existing firms be protected by shutting out more efficient newcomers, as this implies? Troxel's answer is not apparent in the related discussion.

The analytical vagaries mentioned may be associated with a final commentary. This reviewer found the book rather difficult to read, and it is quite possible that undergraduates might have the same problem. The subject matter is somewhat difficult, but this makes clarity of expression all the more imperative.

In summary, Troxel has made a valuable contribution in tying transportation economics in more intimately with economic theory. Accordingly, there is much that is stimulating and valuable for serious students of transportation economics, including regulators. As a textbook for undergraduates, its approach should be highly approved, particularly by instructors operating in an Economics Department, but the problem of presentation may seriously limit its effectiveness. Overall, it is a highly commendable effort which will surely point the way to improvement in transport textbooks and instruction, and ultimately in managerial and regulatory performance. In a very real sense it is a pioneering work and the pioneer cannot be expected to develop fully the country adjacent to the trails over which he passes.

*Michigan State University*

MERRILL J. ROBERTS

*Policy Formation in Railroad Finance.* By John T. O'Neil. Cambridge: Harvard University Press, 1956. Pp. xii, 234. \$4.50.

In this volume Professor O'Neil carefully recounts the development of the financial policy of the Chicago, Burlington and Quincy Railroad during the years 1936-1948. By use of a case study technique the major steps in the development and implementation of the financial policy are carefully noted. In addition, the numerous modifications of this policy which were adopted as a result of changing conditions are carefully evaluated.

This study provides an effective illustration of the use of the historical records of a business enterprise to provide an insight into managerial decision-making processes. One of the primary purposes of Professor O'Neil's study was to "trace the day-to-day decisions that created the policy whose framework provided the basis for managerial decisions." The study certainly fulfils this purpose without becoming overburdened with unimportant details.

A number of interesting factors emerge from Professor O'Neil's analysis. Of these, one of the most significant to students of financial problems is his evaluation of the relative importance of the roles played by internal management and outside financial advisors in the development of financial policy. In the case of the Burlington, the primary credit for developing a satisfactory financial policy must go to President Ralph Budd and Vice-President J. C. James. President Budd was aware of the problems which were created by the approaching maturity of the Illinois Division bonds from the first day that he assumed the presidency. Vice-President James provided a crucial modification for the best financial plans which were presented to the road by its investment bankers.

The central theme of the volume is the struggle of an enlightened railroad management to deal successfully with a tremendous burden of debt inherited from the early years of the road. But, in addition to this problem, interesting insights are provided into the problems such as the relative merits of public versus private placement of railroad securities, the complexities of call provisions of railroad bonds, and the combined effects of declining interest rates and rising railroad earnings upon the financial condition of the railroads.

Because the writer had full access to the files of the Chicago, Burlington and Quincy, the study is well documented. Yet the story is told with full attention given to the principal problems of financial policy. The resulting study is a well-written contribution to the literature of business finance. It will be of special interest to teachers and students of financial problems. The index and the appendix which includes some of the more important documents add to the value of the study.

*University of North Carolina*

JOE S. FLOYD, JR.

## NOTES

### DEATH

Andrew Warren Pierpont, associate professor of business administration and assistant dean of the University of North Carolina School of Business Administration, died on October 20, 1956.

### APPOINTMENTS AND RESIGNATIONS

Aly A. Abdon has been appointed assistant professor of marketing in the School of Business and Public Administration at the University of Missouri.

Marie Jeannine Abshire is now instructor in secretarial science at Southwestern Louisiana Institute.

Richard P. Adams was appointed assistant professor of business administration at Virginia Polytechnic Institute.

Philip Adler has been appointed instructor in the Management Department at the University of Miami.

Harry Ainsworth, formerly at Southern Illinois University, has been appointed assistant professor of marketing, College of Business Administration, University of Arkansas.

Joseph Airov has been promoted to assistant professor of economics in the School of Business Administration, Emory University.

John E. Altazan, of Loyola University of the South, has been appointed Louisiana correspondent for the Southern Economic Journal.

W. H. Anderson has been appointed interim instructor of accounting at the University of Florida.

V. L. Auld is now an associate professor of accounting at Southwestern Louisiana Institute.

Edward Austin has returned to the University of Alabama after a year's leave of absence.

Frank Bain, associate professor, has joined the commerce faculty at McNeese State College. He was formerly at Memphis State College.

James Balch, head of the Department of Business, Arkansas College, is on leave to do advanced work at the University of Arkansas.

W. Campbell Balfour, University College, Cardiff, of the University of South Wales and Monmouthshire, has been appointed visiting associate professor of economics at the University of Texas for the second semester of the 1956-57 academic year.

Joseph W. Ballentine, formerly with the State Department, has been appointed visiting professor of government at the University of Miami.

Bernice Barnes has accepted a position as instructor in business education at Grambling College.

John E. Barthel, who received his doctorate at the University of Berlin, is on the economics staff at Stetson University.

A. J. Bartley, on leave-of-absence during 1955-1956, has returned to the faculty of the Department of Economics at North Carolina State College.

J. Leslie Bayless, formerly at the University of Missouri, has joined the faculty of Louisiana Polytechnic Institute as an associate professor of marketing.

Paul Bechtol has been appointed instructor in economics at Fisk University.

Martin L. Bell, formerly at the Wharton School of Finance and Commerce, University of Pennsylvania, was appointed associate professor of marketing at Washington University.

Jerome Benson has been appointed instructor in business education at the University of Miami.

Alfred Victor Berger-Voesendorf has been appointed visiting professor of economics at the Georgia State College of Business Administration.

H. E. Bice has been appointed visiting professor of business administration to handle the work in foreign trade, College of Commerce, Louisiana State University.

Dan W. Bickley has become assistant agricultural economist with the Department of Agricultural Economics and Rural Sociology at Clemson College.

Lewis Blanchard has been appointed instructor in accounting at Southern State College (Arkansas).

Joseph M. Bonin has been awarded an Earhart Foundation Fellowship at Louisiana State University for 1956-57.

Gladys Boone, of Sweet Briar College, attended the First Congress of the International Economic Association held in Rome, September 6th to 11th, 1956.

Roger L. Bowlby has returned from a year of study at the London School of Economics and Political Science and has accepted an appointment as instructor in economics at the University of Texas.

Ruth D. Bradford is on leave from Grambling College to study during this school year.

Royall Brandis has been promoted to associate professor of economics at the University of Illinois, beginning in fall 1956.

J. Herman Brasseaux, of Louisiana State University, has been awarded a pre-doctoral fellowship by the Ford Foundation for 1956-57.

Fred Brett has been appointed temporary instructor in accounting at the University of Alabama.

William Brewster, Jr., formerly of Texas Western College, has been appointed interim instructor of real estate at the University of Florida.

P. F. Brookens, who retired from the faculty of North Carolina State College on July 1, 1956, has been appointed associate professor of economics in the Department of Sociology and Economics at Meredith College.

T. M. Brookins resigned his position at Dillard University to become a member of the faculty at Prairie View State College.

Dwight S. Brothers, of Princeton University, has been appointed assistant professor of economics at Rice Institute.

Walter S. Buckingham, Jr., of Georgia Institute of Technology, was elected

secretary-treasurer of the Southern Economic Association on November 16, 1956.

John L. Burge has been appointed instructor in the Department of Economics and Business Administration at Alabama Polytechnic Institute.

James F. Butler has been appointed instructor of economics, Harding College.

Vincent Cangelosi, of Louisiana State University, is teaching in the College of Business Administration, University of Arkansas.

Marion Carson has been appointed instructor of accounting at the University of Florida.

Allan M. Cartter has been promoted to associate professor of economics at Duke University.

John E. Champion has been appointed associate professor of accounting in the School of Business at Florida State University. He was formerly at the University of Georgia.

Frank J. Charvat, formerly assistant professor of marketing at the University of Toledo, has been appointed assistant professor of business administration in the School of Business Administration, Emory University.

Clark Chastain, formerly at the University of Michigan, has been appointed assistant professor in accounting, College of Business Administration, University of Arkansas.

Carroll Chauvin has been added to the faculty of Xavier University of New Orleans to conduct a course in C.P.A. review.

Earl F. Cheit has been promoted to associate professor of economics at Saint Louis University.

Clifford D. Clark, assistant professor of economics at North Carolina State College, has received a grant from the National Science Foundation for a research project in the impact of research on growth in textiles, and is teaching half-time this academic year.

Alisone M. Clarke has been appointed instructor of economics at North Carolina State College.

Sherrill Cleland, assistant professor of economics, University of Richmond, has resigned to join the faculty of Kalamazoo College.

Roger M. Clites, formerly professor of economics, Erskine College, and more recently with West Penn Power Company of Pennsylvania, has joined the faculty of the University of Richmond School of Business Administration.

Robert Cojeen, formerly at the University of Kentucky, has accepted a position at the Flint branch of the University of Michigan.

John A. Copps has been appointed head of the Department of Economics at Stetson University. He was formerly at Kalamazoo College.

J. D. Corriher has been appointed instructor in economics at the University of Alabama.

T. Hillard Cox was appointed head of the Department of Business Administration at Virginia Polytechnic Institute as of September 1, 1956.

Thomas E. Crittenden, Jr., formerly at Bishop College, has joined the business faculty at Dillard University.



Maurice C. Cross, of Syracuse University, has been appointed visiting professor of management in the College of Business Administration, University of Texas.

Amy H. Dalton, formerly in the Research Department, Federal Reserve Bank of Richmond, has joined the faculty of the University of Richmond School of Business Administration.

Earl F. Davis, formerly with the Federal Bureau of Investigation, has been appointed assistant professor of business administration in the College of Business Administration, University of Georgia.

John Davis has been appointed instructor in economics at the University of Alabama.

David R. Day, formerly at Indiana University, has been appointed assistant professor of business administration, University of Georgia.

Ralph L. Day has been appointed instructor in industrial management in the School of Industrial Management, Georgia Institute of Technology.

David P. Delorme, formerly of Oklahoma City University, has been appointed head of the Department and professor of Economics, Sociology, and Business Education, Arkansas State Teachers College.

Arthur T. Dietz has been promoted to associate professor of business administration in the School of Business Administration, Emory University.

James E. Dillinger has been appointed associate professor of insurance in the School of Business at Florida State University.

Keith Dix has been appointed part-time instructor in the Department of Economics and Business Administration at Duke University.

Thomas S. Dooley has joined the staff of the Business Department at Lincoln Memorial University.

Louis Dow has accepted an appointment as assistant professor of economics at the University of Oklahoma.

Edward N. Dubois has been appointed assistant professor of economics at Saint Louis University.

Charles Dukes has been appointed part-time instructor in the Department of Economics and Business Administration at Duke University.

E. S. Dunn, Jr., associate professor of economics, University of Florida, is on leave for the current year with Resources for the Future, Washington, D. C.

D. H. Dyke has been appointed assistant professor of business administration to handle the work in business law, Louisiana State University.

Burton N. Elam has joined the faculty at Southwestern Louisiana Institute as associate professor of business administration.

Norman George Ellis, formerly at the University of Mississippi, has been appointed assistant professor of business administration at the College of Business Administration, University of Georgia.

R. C. Ellis, general agent for Franklin Life Insurance Company, has joined the faculty at Louisiana Polytechnic Institute as a part-time assistant professor of life insurance.

Carlos C. Erwin has transferred from agriculture to economics at the University of Kentucky.

Emol Fails has been promoted to associate professor of economics at North Carolina State College.

Floyd A. Farrar, of the Department of Economics, returned to Florida A & M University after a year's study toward the doctorate at the Wharton School of the University of Pennsylvania.

W. F. Feuerlein, recently with the Ministerio de Economia and professor at the University of El Salvador, has been appointed visiting professor of economics, University of Florida.

Elgie Fireoved, has been appointed head of the Economics Department at Southern State College (Arkansas).

Joe S. Floyd, Jr., associate professor of finance at the University of North Carolina, was appointed by the University as one of its editors of the Southern Economic Journal.

Robert A. Ford has been promoted to assistant professor of finance at the University of Alabama.

Edmundo Flores has been granted a leave of absence from the Ministry of the Treasury and the University of Mexico to accept a visiting professorship in the Department of Economics at the University of Texas for 1956-57.

John M. Frikart has accepted a position as associate professor of economics at Southwestern Louisiana Institute.

John L. Fulmer, formerly associate professor of business administration at Emory University, has accepted an appointment as research economist and professor in the Industrial Development Research Branch, Engineering Experiment Station, Georgia Institute of Technology.

M. Mason Gaffney, assistant professor of economics at North Carolina State College, has been allocated research funds from a Ford grant and is being released from teaching for one semester during the academic year.

Clifton L. Ganus, dean of the School of American Studies, Harding College (Arkansas), has returned from a leave of absence.

William Geer has been appointed assistant professor of economics at Stetson University.

Nicholas Georgescu-Roegen is on leave from Vanderbilt University during the fall quarter as visiting professor of economics at the University of Minnesota.

Gerald Gibbons has been appointed part-time professor in the Department of Economics and Business Administration at Duke University.

Wayne F. Gibbs, professor of accounting, has been appointed head of the Department of Business Administration at the College of William and Mary.

M. S. Goldberg, instructor in business administration, Louisiana State University, has resigned to accept a position at Michigan State University.

Herman J. Goldstein has been appointed part-time instructor in economics at the University of North Carolina.

Paul John Gordon, formerly research consultant in management at the Memorial Center for Cancer and Allied Diseases in New York, has been appointed associate professor of business administration in the School of Business Administration, Emory University.

Frederick Gottheil has been appointed part-time instructor in the Department of Economics and Business Administration at Duke University.

O. L. Gray, assistant professor of Economics at Furman University, is on leave of absence to do graduate study at Emory University.

George D. Halsey has joined the School of Business Administration, University of South Carolina, as a part-time lecturer.

Newell B. Ham has been appointed instructor of economics at North Carolina State College.

William W. Harned has joined the staff of the College of Commerce, University of Kentucky.

Cleon Harrell has been promoted to associate professor of economics at North Carolina State College.

V. V. Harrison has been appointed assistant professor in accounting at the University of Alabama.

Ethel Hart has been appointed assistant professor in business education at Southern State College (Arkansas).

Maurice Hartman has been appointed associate professor in accounting in the Department of Economics and Business Administration at Alabama Polytechnic Institute.

Richard Irving Hartman, formerly at Indiana University, has been appointed assistant professor of business administration in the College of Business Administration, University of Georgia.

Milton S. Heath, professor of economics and chairman of Graduate Studies and Research in the School of Business Administration, University of North Carolina, was elected president of the Southern Economic Association for 1956-1957.

Richard L. Hitchcock has been promoted to associate professor of accounting, School of Business, University of Louisville.

Jacqueline L. Hodgson, formerly at the University of Wisconsin, has been appointed instructor of economics, University of Florida.

F. L. Holmes has resigned as director of the School of American Studies and head of the Business and Economics Department, Harding College (Arkansas).

Robert N. Howell has been appointed assistant professor of economics at Memphis State College.

Thomas N. Humble is on leave of absence from the University of Alabama for the fall semester, 1956.

Gene J. Hymel has been appointed instructor in economics at Loyola University of the South.

James C. Ingram, associate professor of economics at the University of North Carolina, was appointed by the University as one of its editors of the Southern Economic Journal.

Frederick C. Joerg has been promoted to professor of economics at Duke University.

Henry A. K. Junckerstorff has been promoted to professor of business administration at Saint Louis University.

Leon Kearney has been appointed assistant professor of business education at Harding College.

Albert S. Keister, who retired in the summer of 1956 as head of the Department of Economics at the Woman's College of the University of North Carolina, is remaining as lecturer during the current year.

P. E. Koefod, formerly with Kansas State College, has been appointed associate professor of economics, University of Florida.

Alfred R. Kurtz, formerly administrator of Beyer Memorial Hospital, has been appointed assistant professor of business administration in the College of Business Administration, University of Georgia.

Louis LaCour has accepted a position in the Business Law Department at Xavier University in New Orleans.

Harold Q. Langenderfer, associate professor of accounting, was appointed assistant dean of the University of North Carolina School of Business Administration, effective October 30, 1956.

Ben T. Lanham, Jr., of Michigan State University, has been appointed head of the Department of Agricultural Economics at Alabama Polytechnic Institute.

W. J. Lanham has joined the staff of the Production Economics Research Branch, USDA, at Clemson College as agricultural economist.

William L. Larger has been appointed instructor of marketing, School of Business, University of Louisville.

Leon Lee, instructor in economics at Louisiana State University, has returned to the University of Oklahoma after completing the requirements for the Ph.D. degree.

Oscar J. Lewis has been appointed assistant professor of accounting at Wake Forest College.

Erwin E. Liebhafsky, of Pennsylvania State University, has been appointed associate professor of economics at Texas A & M College.

Arthur Lindsay, of the Economics Department of Presbyterian College, has gone to San Paulo, Brazil for a year's study of the language and then will be vice-president of a mission school in Granhuns, Pernambuco.

Harold Love has been appointed part-time instructor in economics at Fisk University.

J. W. Lowe, formerly instructor at the University of Florida, was appointed assistant professor of economics at Arizona State College.

James T. Lucas was appointed instructor in economics at Virginia Polytechnic Institute.

Thomas J. Luck, formerly head of the Department of Business Administration of William and Mary College, has become director of Management Education for the American College of Underwriters.

Edmund C. Lynch has been named instructor in management in the College of Business Administration, University of Texas.

John B. McFerrin has been appointed director of Graduate Studies in the College of Business Administration, University of Florida.

William J. McGrath has joined the faculty of the Commerce Division, Villa Madonna College, in the field of business administration.

Carl McKenry, formerly in the office of the legal counselor, Pan American World Airways, has been appointed assistant professor of aviation administration at the University of Miami.

Everett J. Mann, formerly supervisory auditor with the Army Audit Agency in Paris, France, has been appointed associate professor of business administration in the School of Business Administration, Emory University.

Thomas A. Martinsek, instructor of economics at North Carolina State College, has been allocated research funds from a Ford grant and is being released from teaching for one semester during the academic year.

Arthur W. Mason, Jr., formerly director of the college relations at the American College of Life Underwriters, has been appointed assistant professor of finance at Washington University.

William A. Mauer has been appointed instructor in economics at Texas A & M College.

F. Byers Miller has resigned as dean of the School of Business Administration of the University of Richmond to become executive director of the National Association of Bank Auditors and Comptrollers.

C. N. Millican, formerly assistant professor of economics, University of Florida, has been appointed dean of the College of Business Administration, Hardin-Simmons University.

Donald Mills has been appointed instructor in economics and accounting at the University of Alabama.

Charles R. Milton has received an appointment as part-time instructor in the area of personnel at the University of North Carolina.

H. H. Mitchell, formerly associate professor of economics and business administration at Alabama Polytechnic Institute, has been appointed head of the Department of Business Administration at Mississippi State College.

Charles N. Moore has returned to the University of Alabama as assistant professor of business statistics after a leave of absence.

Aurelius Morgner, professor of economics at Texas A & M College, has been granted a leave of absence for 1956-57 to teach in U.S. Air Force Bases in Europe.

Rudolph A. Morow is teaching business administration at Villa Madonna College.

James A. Morris, professor of economics, School of Business Administration, University of South Carolina, is working for a year in Turkey with the International Cooperation Association.

Lloyd Morrison has relinquished the chairmanship of the Department of Accounting at Louisiana State University. He will continue his teaching duties.

Frederick S. Morton, head of the Department of Business Administration at Davidson College, is on leave of absence during the fall semester of 1956-1957.

George Moss has been granted a leave of absence from the Accounting Department at the University of Miami and will spend the next year at the University of California completing his Ph.D. work.

Alvan J. Obelsky has been appointed assistant professor of economics at the University of Miami.

Bernard M. Olsen, assistant professor of economics at North Carolina State



College, has received a grant from the National Science Foundation for a research project in the impact of research on growth in textiles, and is teaching half-time during this academic year.

C. C. Osterbind has been promoted to research professor in the Bureau of Economic and Business Research, University of Florida.

Logan C. Osterndorf was appointed instructor in economics at Virginia Polytechnic Institute.

Jeanne Owen, formerly at Marshall College, has gone to Wake Forest College as assistant professor of business law.

William N. Parker, formerly of Williams College, was appointed associate professor of economics at the University of North Carolina in September, 1956.

James Parthemos, a graduate student in economics at Duke University, has been awarded an Earhart Foundation grant for the academic year 1956-57.

W. Nelson Peach, of the University of Oklahoma, has been granted a two-year leave of absence to teach at the University of Karachi, Pakistan.

Melville Peterson has been appointed assistant professor of business finance in the School of Business and Public Administration at the University of Missouri.

Lewis S. Philhower, Jr., has become assistant agricultural economist with the Department of Agricultural Economics and Rural Sociology at Clemson College.

Newbern Earl Piland has been appointed instructor in economics at North Carolina State College.

Willie Frank Putnam has become instructor in economics, School of Business Administration, University of South Carolina.

Rene Randon has joined the business faculty at Xavier University of New Orleans.

Robert J. Rathe is now lecturer in business communications at Loyola University of the South.

James W. Reddoch has been appointed acting head of the Department of Business Administration in addition to his duties as assistant to the dean, Louisiana State University.

W. C. Ribble has joined the staff of the Economics Department of Ouachita Baptist College.

J. J. Richison has been appointed instructor in accounting at Louisiana State University.

Kermit Roberts has been appointed instructor of accounting at the University of Miami.

M. J. Roberts, professor of transportation at the University of Florida, is on leave of absence during the current academic year at Michigan State University, where he is engaged in a highway research project.

A. J. Robertson has joined the University of Florida staff as instructor in economics and assistant to the dean, College of Business Administration.

H. John Ross, associate professor of management at the University of Miami, has been granted a leave of absence for one year.

John B. Ross has been appointed instructor in accounting at the University of Alabama.

Alek A. Rozental has been appointed assistant professor of economics at Saint Louis University.

John A. Ryan, formerly of Oklahoma A & M College, has been appointed assistant professor of marketing in the College of Business Administration, University of Texas.

Bernard Schechterman has been appointed instructor in the Government Department at the University of Miami.

John M. Scheidell has been appointed acting temporary instructor in economics at Florida State University.

Karle Scheele has become assistant economist at Presbyterian College.

Edward J. Schmidlein has been appointed associate professor and director of the Department of Accounting at Saint Louis University.

R. Monroe Schwartz has been appointed instructor in business administration in the School of Business Administration, Emory University.

Frederick Sedorchuk has been appointed instructor in management at the University of Miami.

B. William Sewell has been added to the accounting staff at Villa Madonna College.

Harold Shapiro, formerly head of the Department and professor of Economics, Sociology, and Business Education, Arkansas State Teachers College, is now at Arizona State College.

Clifford H. Sheffey has joined the Department of Economics at Hiwassee College.

Andre Siemieniewski, formerly of the University of California at Los Angeles, has been appointed instructor in economics, University of Florida.

Dick Sullivan is serving as business administration instructor at Southeastern Louisiana College.

Donald F. Simons has been appointed instructor of business management in the School of Business and Public Administration at the University of Missouri.

Walter L. Slifer has joined the Department of Economics at Carson-Newman College.

C. D. Smith, formerly on the staff of Wabash College, has been appointed assistant professor of economics, University of Florida.

Howard R. Smith, professor of economics in the College of Business Administration, University of Georgia, was elected first vice president of the Southern Economic Association for 1956-1957.

Martha Smith has been promoted to assistant professor of secretarial administration at the University of Alabama.

Zennis Smith, formerly at McGill University, is a new appointee to the economics staff of Florida A & M University.

Robert M. Snyder has been appointed visiting professor of economics at the University of Miami. He has been affiliated with the Du Pont Company for the past twenty-five years.

Joseph J. Spengler, professor of economics at Duke University, participated in the South-East Asia Course in Economics that was held at the University of

Mayala, Singapore, July 26 to September 7, and subsequently in a week's conference on South-East Asia problems.

Frank J. Stass has accepted an appointment as assistant professor of accounting and management at Loyola University of the South.

Howard L. Steele has become assistant agricultural economist with the Department of Agricultural Economics and Rural Sociology at Clemson College.

R. L. A. Sterba, formerly on the staff of Midwest Research Institute, has been appointed assistant professor of economics, University of Florida.

Jacob T. Stewart, formerly at Texas Southern University, has assumed the position of chairman of the Business Education Department at Grambling College.

William Stewart, of the University of Melbourne, Australia, has joined Duke University as research associate in the Department of Economics and Business Administration.

A. D. Stobbe has been appointed instructor of accounting, School of Business Administration, University of South Carolina.

M. A. Sutherland has changed from extension economist to assistant in farm and home development, South Carolina Extension Service, Clemson College.

V. V. Sweeney has been appointed interim head of the Department of Business Organization and Operation, University of Florida.

Herman P. Thomas, professor of economics, University of Richmond, has been appointed acting dean of the School of Business Administration.

Hugh O'H. Thompson, formerly at the University of Washington, has been appointed instructor of accounting, College of Business Administration, University of Arkansas.

N. B. Thomson has been appointed half-time lecturer in the Department of Business Organization and Operation, University of Florida.

Rudolph W. Trenton, professor of economics in the School of Commerce, Oklahoma A and M College, was elected second vice president of the Southern Economic Association for 1956-1957.

Donald Urquidi has been appointed instructor in the Government Department at the University of Miami.

Arthur H. Vandenberg, Jr., who has been visiting lecturer in the Government Department at the University of Miami, has resigned.

R. H. Voorhis has been appointed professor and head of the Department of Accounting, Louisiana State University, beginning in February, 1957.

Roy Welborne, professor of business administration, has been appointed head of the Department at Harding College.

George D. Welch has been appointed assistant professor of accounting at the University of Miami.

Dorothy Claire White has joined the faculty at Southwestern Louisiana Institute as instructor in secretarial science.

John D. Wilcox has been appointed assistant professor of economics at the University of Miami.

Robert C. Wiley, Jr., has been appointed assistant professor of business administration in the College of Business Administration, University of Georgia.

Robert Will has been appointed part-time instructor in the Department of Economics and Business Administration at Duke University.

John P. Williams, for many years professor of business administration at Davidson College and thereafter national director for the American College of Life Underwriters, returned to Davidson for the fall semester, 1956-57.

Thomas L. Williams, of the College of William and Mary, has been appointed assistant professor of business administration in the College of Business Administration, University of Georgia.

Wilson E. Williams, professor of economics, has returned to Virginia State College after a six-month leave of absence on assignment with the International Labor Office to assist the Government of Costa Rica in the area of Employment Market Information.

Henry B. Wilson has joined the School of Business Administration, University of South Carolina, as assistant professor.

Mary Woeber has returned to the University of Alabama after a leave of absence.

Clyde E. Woodall has become assistant agricultural economist with the Department of Agricultural Economics and Rural Sociology at Clemson College.

Leonard T. Wright, formerly with William and Mary College, has been appointed assistant professor of business administration at the College of Business Administration, University of Georgia.

Charles Wurst, associate professor of marketing at the University of Miami, has returned from a one-year leave of absence which he spent at the University of Arkansas doing Ph.D. level work.

Stanley Young has been appointed assistant professor of business administration at Saint Louis University.

#### NEW MEMBERS

The following names have been added to the membership of the Southern Economic Association:

Benjamin F. Doodridge, Memphis State College, Memphis, Tenn.

John W. Kennedy, Department of Economics, The Woman's College, University of North Carolina, Greensboro, N. C.

H. Owen Long, Kentucky Wesleyan College, Owensboro, Kentucky.

Clinton A. Phillips, Department of Economics, University of Tennessee, Knoxville, Tenn.

Phillip M. Sarver, University of Houston, Houston 12, Texas.

Irwin M. Stelzer, Boni, Watkins, Jason & Co., 212-77 16th Avenue, Bayside 60, New York.

Bernard Udis, Department of Economics, University of Tennessee, Knoxville, Tenn.

## BOOKS RECEIVED

- Abramson, Adolph G. and Mack, Russell H. (eds.). *Business Forecasting in Practice: Principles and Cases*. New York: John Wiley & Sons, 1956. Pp. xiii, 275. \$6.50.
- Andrews, William H., Jr., and Miller, Raulman A. *Employment Security Financing in Indiana*. Bloomington, Ind: Bureau of Business Research, School of Business, Indiana University, 1956. Pp. xiii, 239. Paper, \$3.00.
- Atkinson, Thomas R. *The Pattern of Financial Asset Ownership: Wisconsin Individuals, 1949*. Princeton, N. J.: Princeton University Press, 1956. Pp. xviii, 176. \$3.75.
- Bain, Joe S. *Barriers to New Competition: Their Character and Consequences in Manufacturing Industries*. Cambridge, Mass.: Harvard University Press, 1956. Pp. x, 329. \$5.50.
- Bell, Hermon F. *Retail Merchandise Accounting*. New York: Ronald Press Company, 1956. Pp. ix, 473. \$12.00.
- Bell, Philip W. *The Sterling Area in the Postwar World: Internal Mechanism and Cohesion, 1946-1952*. New York: Oxford University Press, 1956. Pp. xxvi, 478. \$10.10.
- Bidwell, Percy W. *What the Tariff Means to American Industries*. New York: Harper and Brothers, 1956. Pp. xvi, 304. \$5.00.
- Blumenthal, W. Michael. *Codetermination in the German Steel Industry: A Report of Experience*. Princeton, N. J.: Industrial Relations Section, Department of Economics and Sociology, Princeton University, 1956. Pp. 116. Paper, \$3.00.
- Boulding, Kenneth E. *The Image: Knowledge in Life and Society*. Ann Arbor, Mich.: The University of Michigan Press, 1956. Pp. ii, 175. \$3.75.
- Bryant, Willis R. *Mortgage Lending: Fundamentals and Practices*. New York: McGraw-Hill Book Company, 1956. Pp. xi, 375. \$6.75.
- Cashin, Jack W. *History of Savings and Loan in Texas*. Austin, Texas: College of Business Administration, University of Texas, 1956. Pp. xv, 171. \$2.50.
- Cauley, Troy J. *Agriculture in an Industrial Economy: The Agrarian Crisis*. New York: Bookman Associates, 1956. Pp. x, 191. \$4.00.
- Clark, M. Gardner. *The Economics of Soviet Steel*. Cambridge, Mass.: Harvard University Press, 1956. Pp. xiv, 400. \$7.50.
- Dandekar, V. M. *Use of Food Surpluses for Economic Development*. Poona, India: Gokhale Institute of Politics and Economics, 1956. Pp. xiv, 153. Paper, \$1.10.
- DePowdin, Horace J. *Discharging Business Tax Liabilities*. New Brunswick, N. J.: Rutgers University Press, 1956. Pp. xii, 167. \$4.00.
- Duncan, Otis Dudley and Reiss, Albert J., Jr. *Social Characteristics of Urban and Rural Communities, 1950*. New York: John Wiley & Sons, 1956. Pp. xviii, 421. \$6.50.



- Edwards, Corwin D. *Big Business and the Policy of Competition*. Cleveland, Ohio: Press of Western Reserve University, 1956. Pp. x, 180. \$3.50.
- Friedman, Milton (ed.) *Studies in the Quantity Theory of Money*. Chicago, Ill.: University of Chicago Press, 1956. Pp. v, 265. \$5.00.
- Golding, E. W. *The Generation of Electricity by Wind Power*. New York: Philosophical Library, 1956. Pp. xvi, 318. \$12.00.
- Grant, Eugene L. *Basic Accounting and Cost Accounting*. New York: McGraw-Hill Book Co., 1956. Pp. v, 377. \$6.00.
- Hall, H. Duncan, and Wrigley, C. C. *History of the Second World War: Studies of Overseas Supply*. New York: British Information Services, 1956. Pp. xi, 537. \$6.75.
- Hewitt, Charles Mason, Jr. *Automobile Franchise Agreements*. Homewood, Ill.: Richard D. Irwin, 1956. Pp. xiii, 287. \$6.00.
- Hutchinson, E. P. *Immigrants and Their Children, 1850-1950*. New York: John Wiley & Sons, 1956. Pp. xiv, 391. \$6.50.
- International Labour Office. *Production and Employment in the Metal Trades: The Problem of Regularisation*. Washington, D. C.: International Labour Office, 1956. Pp. vi, 122. Paper, \$1.25.
- International Labour Office. *Social Aspects of European Economic Co-operation*. Washington, D. C.: International Labour Office, 1956. Pp. vii, 180. Paper, \$1.50.
- Kirk, Grayson and others. *The Changing Environment of International Relations: Brookings Lectures, 1956*. Washington, D. C.: Brookings Institution, 1956. Pp. ix, 158. \$2.50.
- Kosminsky, E. A. *Studies in the Agrarian History of England in the Thirteenth Century*. Translated from the Russian by Ruth Kisch. New York: Kelley & Millman, 1955. Pp. xxvii, 370. \$7.00.
- Kuhn, Alfred. *Labor: Institutions and Economics*. New York: Rinehart & Company, 1956. Pp. xx, 616. \$6.50.
- Kulp, C. A.: *Casualty Insurance: An Analysis of Hazards, Policies, Insurers and Rates*. New York: Ronald Press Company, 1956. Pp. xii, 635. \$7.50.
- Lester, Bernard. *Weatherby Crisis*. New York: Twayne Publishers, 1956. Pp. viii, 265. \$3.50.
- Lloyd, E. M. H. *Food and Inflation in the Middle East, 1940-45*. Stanford, Cal.: Stanford University Press, 1956. Pp. xiv, 375. \$6.00.
- McNair, Malcolm P., and Hansen, Harry L. *Readings in Marketing*. New York: McGraw-Hill Book Co., 1956. Pp. xi, 559. \$6.50, paper \$4.75.
- Moreel, Ben. *Our Nation's Water Resources—Policies and Politics*. Chicago, Ill.: University of Chicago, 1956. Pp. v, 266, \$3.50.
- Muranjan, S. K. *Reflections on Economic Growth and Progress*. Poona, India: Gokhale Institute of Politics and Economics, 1956. Pp. 24. Paper, 20¢.
- Neiswanger, W. A. *Elementary Statistical Methods*. New York: Macmillan Company, 1956. Pp. xx, 749. \$6.90.
- O'Neil, John Tettemer. *Policy Formation in Railroad Finance: Refinancing the*

- Burlington, 1936-1945*. Cambridge, Mass.: Harvard University Press, 1956. Pp. xii, 228. \$4.50.
- Robertson, Dennis H. *Economic Commentaries*. New York: John de Graff, 1956. Pp. vii, 174. \$3.75.
- Robinson, Joan. *The Accumulation of Capital*. Homewood, Ill.: Richard D. Irwin, 1956. Pp. xvi, 440. \$6.60.
- Roosa, Robert V. *Federal Reserve Operations in the Money and Government Securities Markets*. New York: Public Information Department, Federal Reserve Bank of New York, 1956. Pp. 108.
- Ruggles, Richard and Ruggles, Nancy D. *National Income Accounts and Income Analysis*. New York: McGraw-Hill Book Company, 1956. Pp. viii, 452. \$6.50.
- Sherwin, Stephen F. *Monetary Policy in Continental Western Europe, 1944-1952*. Madison, Wis.: Bureau of Business Research and Service, University of Wisconsin, 1956. Pp. iv, 311. Paper, \$1.15.
- Spriegel, William R. and Lanham, E. *Personnel Practices in Department Stores*. Austin, Tex.: Bureau of Business Research, University of Texas, 1956. Pp. viii, 67. Paper, \$1.00.
- Spurr, William A. *Workbook in Business and Economic Statistics*. Homewood, Ill.: Richard D. Irwin, 1956. Pp. viii, 272. Paper, \$3.50.
- Stigler, George J. *Trends in Employment in the Service Industries*. Princeton, N. J.: Princeton University Press, 1956. Pp. xviii, 167. \$3.75.
- Taylor, George Rogers and Neu, Irene D. *The American Railroad Network, 1861-1890*. Cambridge, Mass.: Harvard University Press, 1956. Pp. viii, 113. \$3.75.
- Tripp, Reed L. (ed.). *Proceedings of the Eighth Annual Meeting: Industrial Relations Research Association*. Madison, Wis.: Industrial Relations Research Association, 1956. Pp. x, 385. Paper, \$3.00.
- United Nations. *Economic Developments in Africa, 1954-1955*. New York: Columbia University Press, 1956. Pp. vii, 100. Paper, \$1.00.
- United Nations. *Economic Developments in the Middle East, 1954-1955*. New York: Columbia University Press, 1956. Pp. viii, 151. Paper, \$1.50.
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